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ABSTRACT

This handbook is designed to provide teachers and administrators at the district and school level with a set of procedures for gathering information about the major components of a computer education program and for using the information to develop conclusions and recommendations regarding the components of the program. The four major components of the computer education program are identified as: (1) goals and objectives; (2) staff development; (3) instructional materials; and (4) student achievement. The first of the handbook's three major units focuses on planning the evaluation, and offers background information on both the evaluation process and the components of a computer education program; it also describes the evaluator's task and provides guidelines for setting up the evaluation process. The second unit, gathering the information, provides step-by-step procedures for determining what information is needed, how it will be gathered, and how to use the tools provided to collected the needed data. The final unit provides assistance in summarizing the data collected and using it to develop recommendations, as well as guidelines for reporting the results to the school or the district. It is noted that the handbook's procedures and tools are specifically designed to assist practitioners in looking at the use of computers in the new content area called "computer education," which may include computer instruction integrated into the curriculum or a set of computer courses such as computer literacy, data processing, or computer applications. References are provided at the end of each of the handbook's nine sections, and a glossary is included. (EW)

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ABOUT THE AUTHOR

Karen J. Billings is the co-author of *Are You Computer Literate?* and *Problem Solving with Calculators* (both with David Moursund) and *Microcomputers in Education* (with James Poirot). She most recently served as an Executive Editor of the Instructional Computing Department at Houghton Mifflin Company. Prior to that, she was at Columbia University Teachers College, working as the Director of the Microcomputer Resource Center and as an instructor in the Computing in Education Program. She has also taught secondary school mathematics and computer classes. She has a B.A. degree from the University of Northern Iowa, an M.A. from the University of Oregon and is completing an Ed.D. from Columbia University Teachers College.

Ms. Billings is currently serving on the Technology Advisory Committee for the National Council of Teachers of Mathematics and as the Vice-Chair of SIGCUE (Computer Uses in Education) for the Association of Computing Machinery. She has served on the AdvisoryBoards for *Instructor, Electronic Learning, Computers in Mathematics and Science Teaching,* as well as an advisor to several computer literacy projects funded by the National Science Foundation. She has made numerous presentations at state, regional, and national education conferences and has published many articles in magazines and journals.

This monograph is published by the International Council for Computers in Education, the United States and international professional organization for computer-using educators. ICCE is dedicated to improving educational uses of computers and to helping both students and teachers become more computer literate. ICCE publishes *The Computing Teacher,* a journal for teachers and for teachers of teachers. It also publishes a number of booklets of interest to educators. Write for a free catalog at the address given below.

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AN EVALUATION HANDBOOK
FOR A
COMPUTER EDUCATION PROGRAM

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AUTHOR'S NOTE:

This handbook was developed as part of my doctoral dissertation work at Columbia University Teachers College. The faculty members who provided assistance were: Professor Bruce R. Vogeli, Professor Robert Holloway and Professor J. Philip Smith.

The first draft of the handbook was reviewed by 24 panel members, including the doctoral committee, computer educators at the university and school levels, school building and district administrators, education agency personnel at the regional, state and national levels, and program evaluators. Their comments and reactions were summarized and used to revise the handbook.

This revised handbook has been field-tested in 24 school sites around the country. Information gathered from those schools and from users such as yourselves will be used to again revise the handbook so that it increasingly meets the evaluation needs of schools.

Karen J. Billings

October, 1985

INTRODUCTION

Who the handbook is for

This handbook is for you if you are an educator (or a group of educators) who wants, or needs, to evaluate the computer education program in a school. You may be any one of the following people:

a teacher (of computer classes or other subject areas)

a department head, computer resource person or the school principal or headmaster

a district computer coordinator or curriculum head

a district research specialist or program evaluator

Regardless of your role, you now have a need to gather information about the computer education program. In your case, the program could be any one of the following:

a computer unit (taught at the elementary or secondary level)
a computer course (such as computer literacy or BASIC programming)
computer instruction that is integrated into other instruction
all of the computer courses taught in a school
a district-wide K-12 computer education program

While the handbook assumes that the school or district wants the information that you are going to collect, it does not assume that you have any prior skills or experience as a program evaluator. However, the handbook will provide you the procedures and understanding to produce an effective program evaluation.

What it does

The **goal** of the handbook is to give you the procedures and tools that will help you gather and use information about your computer education program. Your computer education program could be one where your computer instruction is part of another subject area (integrated into the curriculum). Or it could be a set of computer courses such as computer literacy, data processing, or computer applications.

The **objectives** of the handbook are to give you a set of procedures:

1. for gathering information about the major components of your computer education program.
2. for using the information to develop conclusions and recommendation regarding the components of the program.

The computer education program may be at a very early stage of development. In this case the handbook will help you react to a recently written program plan or set of newly developed goals and objectives. The program may also have been implemented for a number of years, and have the courses, staff, hardware, software and print materials all in place. In this case, you can use the handbook to examine all of the components of the program and see how well they are working.

The handbook is not designed to give you "final" data or "evidence" that your program should be continued or that it is worth the money it costs. Instead, you will get information about the program which will help you determine if, and how, it should be modified for the next year.

The handbook is also not designed to help you evaluate programs called computer-assisted instruction, where computers are used to teach traditional content topics in areas such as reading, language arts or mathematics. While the handbook's procedures and tools may be applied to an evaluation of a CAI program, they were not specifically designed for that type of evaluation. The process and examples in this book are instead designed to assist you in looking at the use of computers in the new content area called "computer education".

What the handbook includes

The handbook is divided into three major units:

Planning the Evaluation offers background information first on the evaluation process and then on the components of a computer education program. The last part of the unit describes the evaluator's task and helps set up the evaluation process.

Gathering the Information gives you the step by step procedures for determining what information is needed, how it will be gathered and how to use the tools to collect the data that you need.

Using the Information helps you summarize the data you have collected and use it to develop recommendations regarding the computer education program. The last section is designed to help you report the results to the school or the district.

The handbook will help you discover what your computer education program does and does not do by helping you gather specific information about the major components of the computer education program:

Goals and objectives

Staff development

Instructional materials

Student achievement

Gathering the information should then enable you to draw conclusions and to make recommendations regarding the computer education program. The handbook will help you diagnose the effective, uncertain, and problem areas in your program, but it cannot make the specific recommendations for improvements. Because your computer education program is unique, you and the other people in your school will be the ones to recommend changes, if the evaluation determines that change is appropriate.

How it should be used

The handbook is structured to take you through the steps of an evaluation. Depending on the scope of your evaluation, you will want to use some of the sections of the handbook in different ways.

If you are a ...	then use the handbook to...
classroom teacher	gather information about your computer instruction, whether taught in one course or integrated into another subject area.
department head or computer resource person or school principal	set up a process for gathering information about the computer units or courses in your school.
district computer coordinator or curriculum head	set up a process for gathering information about the program in each school.
program evaluator or district research specialist	monitor the progress of the computer education program with the help of computer teachers and coordinators.

Because people doing evaluations have varying needs and experiences, each section contains a part to read and a part to do. The part to read gives you the background for that step in the procedure and explains any checkpoints and sample forms that follow. A list of "Further References" provides additional reading material.

The part to do is at the end of each section, designed as checkpoints and sample forms. To actually carry out the steps of the evaluation, you should complete all of the checkpoints and use the appropriate forms. This information becomes the basis for your report.

How long it will take to use it

The length of time needed to use the handbook depends on the amount of information you want to gather and the number of people involved in the evaluation process. A teacher who wants to review his or her course before reteaching it can certainly do so much more quickly than a district coordinator who needs information on all the district's computer courses.

The evaluation procedure in this handbook is divided into three levels:

LEVEL	SUGGESTED TIME FRAME	INFORMATION TO BE GATHERED	RESULTS
ONE	2-3 hours per teacher or course	Were goals and objectives met? Why or why not?	Conclusions about attainment of goals & objectives.
TWO	1 days per teacher or course	What is known about staff development, program materials, and students?	Conclusions about all four components of program.
ADVANCED	2 days per teacher or course	Need very complete review of all four components.	More extensive data on four components.

The amount of time you will need to do an evaluation also depends on the stage of development of your computer education program. The longer it has been in place, the more activites and experiences you will have as a basis for gathering information.

Before you actually use the handbook, first scan it to get an overview of the entire process. Then carefully work through each section, completing the checkpoints and using the appropriate sample forms. You have permission to duplicate or revise any of the forms for your evaluation and for your report.

UNIT 1

PLANNING THE EVALUATION

Planning the Evaluation | **Gathering the Information** | **Using the Information**

1. Evaluation in schools
2. The computer education program
3. Planning the evaluation

This unit offers background information on the evaluation process in schools, the components of a computer education program, and the steps in planning an evaluation. Each section gives a perspective on the evaluation process, the components of your program and finally on the actual process that you will follow. The checkpoints and sample forms in each of the sections provide background and information for the next unit when you gather your data.

Section 1

EVALUATION IN SCHOOLS

There are many things to consider in the planning stages of any evaluation. Your first consideration should be for the assumptions that people in your school have about the evaluation process. Why should it be done? What are the concerns about the process? What are the steps that one goes through in doing an evaluation?

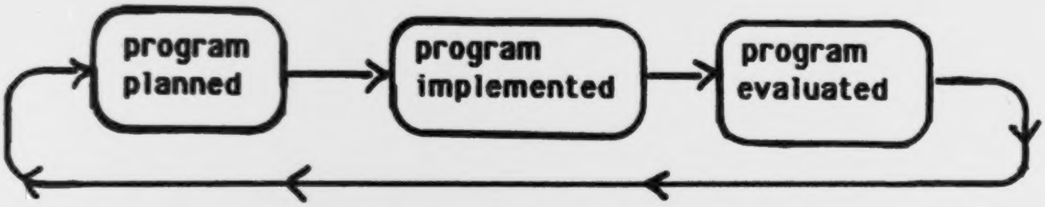
This section first addresses those questions and then, through the checkpoints, gives you the opportunity to describe the information you already have.

The need for evaluation

While the word "evaluation" may evoke some unpleasant reactions among educators, the process of evaluation can indeed be both positive and valuable. An evaluation not only helps describe a program in a school, but also gives a technique for monitoring and improving that program. It can also point out the achievements and attitudes of the participants and convey information about the program to the public.

An evaluation process can also benefit the computer education programs that are emerging in schools. In recent years, an increasing number of states and school districts have mandated that computer literacy or computer education be a goal for all students. Many schools have written a rationale for a computer literacy program, added computer-related objectives to courses in the traditional content areas, added computer units or courses at certain grade levels, developed budgets for hardware, software and other instructional materials, and instituted a staff development program.

These newly developed programs will undergo revision and modification as the staff discovers what aspects of the program works best in a particular setting. In fact, program development should always include an evaluation phase which provides information that can be used in the next stage of planning.



The major benefit of an evaluation process is that the program staff has data that helps them modify their plan for the next stage of the development. The teachers and administrators can see the progress they are making as the computer education program is implemented.

The other benefit is to the taxpayer and others who support the program. Computer education programs are not only costly initially, but are growing more expensive each year. Schools are continuing to increase their staff development plans as well as their hardware and instructional materials purchases. Educators and parents soon will ask "How well is the computer education program going?" or "What are the students learning in this course called 'Computer Literacy'?"

These questions about outcomes soon lead to another set of questions: "How can we actually find out what is happening as a result of our computer classes?" and "What assessment tools should we be using to evaluate the program?" Qualitative responses may suffice but those developed through a structured, objective evaluation are likely to be much more credible and persuasive.

The concerns about evaluation

You probably already sense the need for evaluating the computer education program in your school. Perhaps you, as a teacher, feel the need to change a course before it is taught again. Perhaps you are part of a committee selected to review the program because it is new. Maybe the school board has recently requested a report. Whatever the reason, information needs to be gathered, interpreted, and shared with the right people so that they will know what the program does and does not do.

Will everyone agree that it is time to evaluate the computer education program? Perhaps not. Here are some of the questions that are typically asked or some of the attitudes that are expressed when the topic of evaluation comes up.

Question: **Isn't it too early to evaluate our computer education program? We just started implementing it.**

Response: Every educational program goes through stages of development. Regardless of the stage of the current program, an appropriate evaluation process will determine the progress that the program is making. You may want to look at very different aspects of the program in its first year as compared to its second or third year. An evaluation may also suggest changes so that the program continues to improve.

Question: **Why do we need to evaluate our computer education program at all? It seems to be going O.K.!**

Response: Increasing numbers of decisions are required regarding hardware, software and book purchases, the computer courses to be offered, and the amount or type of staff training. Experiences you have had to date will help you make the best decisions that you can. However information collected over a period of time, will prepare you to make even better decisions and to support them in the face of lack of understanding and even opposition and challenge.

Question: **How will the evaluation information be used? Will it be part of the performance reviews of our teachers?**

Response: The evaluation process for the computer education program should be separated from any regular or general evaluation of teachers. The computer education program will be evaluated on the attainment of its goals and objectives, staff development, instructional materials and effect on students.

Question: **Is evaluation really worth the effort? Most evaluation reports are too long, filled with incomprehensible statistics and placed on shelves where no one ever looks at them!**

Response: This process is designed to help you evaluate your particular computer education program. The results will be valuable to many audiences. The value of the report will be in direct proportion to the evaluator's knowledge of the needs of the audience.

Question: **Isn't evaluation just another word for comparing pre-test and post-test scores? If you need "hard data", it is easier to focus on easily measurable situations.**

Response: Tests are just one set of tools to use in monitoring the effectivenss of a program. There are many others: observations, questionnaires, interviews and document review. They can give you numerical and descriptive information about the components of the computer education program: the goals and objectives, staff development, instructional materials and on student achievement.

But, even if there are questions and concerns about the evaluation process, the information that you gather will be especially valuable to your colleagues, the program staff and to the school community. All you need to do is get started!

Research versus evaluation

Are you going to be conducting a research or an evaluation project? It depends on the kind of questions you ask and the kind of conclusions you draw, and the kinds of decisions that you seek from the evalation.

The goals of most research studies are to obtain generalizable knowledge or to test the relationship between two or more things. Researchers investigate questions such as: " How does the use of a word processor affect a child's writing skill? " or " How does the programming process affect a student's problem solving ability?" or "What is the computer's impact on our nation's schools?" The process that researchers would use to answer those questions would take a great deal of time and expertise in research techniques.

The goal of a program evaluation is generally to monitor a program to determine whether it can be improved or if it should be maintained or terminated. Evaluators typically collect information about the program to see how it is being implemented and to form an opinion as to its value. Program evlauators answer such question as: ' Are the computer courses offering to students what they should?" or "Is the staff inservice program doing a sufficient job of giving our teachers the computer-related skills they need in the classroom?"

Evaluators can be teachers and administrators from within the school system, resource personnel from regional education agencies or evaluation experts from outside sources such as a university or state department of education. A classroom teacher can evaluate his or her own course to see how it should be changed, if at all, the next time it is taught. For a district's computer education program to be evaluated, the evaluator could be someone from the district's curriculum or research staff or someone with training or experience in program evaluation.

So, if the questions relate to how well a program is working or if any modifications may be needed in a program, an evaluation would be conducted.

Summative vs formative evaluations

Evaluations are described as being formative or summative. What is the difference? Which type of evaluation is appropriate for a computer education program?

A summative evaluation typically yields final information that indicates the end result of the program. A summative report will document the program's implementation at the end of a trial period or indicate a program's degree of success after it has been refined. The reports are more formally written and provide summary statements to the program planners and decision makers.

A formative evaluation is typically designed to give the program planners and implementers an idea of how well their program is working, particularly in its initial stages. A formative report usually describes program objectives, its content, indicates the progress in student attitude and achievement. It then identifies the components in the computer education program that work well and the ones that need modification. A formative evaluation will be useful at the end of the first year of a program and in following years.

If the purpose of your evaluation is to gather information about the progress of the computer education program, you will be conducting a formative evaluation. The results of your formative evaluation will also be good baseline data if a summative evaluation is done at a later time.

The evaluator's task

As a formative evaluator, your primary task is to gather and use information about a program, in this case, a computer education program. The program evaluation requires three main steps:

1. Plan the evaluation process.
   Understand the purpose of the evaluation, decide what steps you will use, and prepare others who may assist you.

2. **Gather information about the program.**
   Decide what information is needed, how it will be gathered, and use the tools in the handbook to collect the data.

3. **Use the information about the program.**
   Summarize the data that you collect and develop conclusions and recommendations. Prepare a summary report.

Your very **first** step in planning the evaluation can take place right now. Find out what you already know about the task or set of tasks ahead of you by using the two checkpoints at the end of this section. They will help you describe the information you now have and define the information you will need to gather.

Do ***Checkpoint 1-1:*** **What is your task?** found on page 1-8 Record your position in the school district and what you need to evaluate. This checkpoint will not only summarize your task but also serve as a reminder as you proceed with your evaluation process.

Complete ***Checkpoint 1-2:*** **Why do an evaluation?** on page 1-9 Check the reasons for your evaluation. This will help in determining the information that you will need as well as define your audience for your report. This page will also help you formulate more specific questions when you do Section 4.

Checkpoint 1 - 1

What is your task?

Check all appropriate responses to the following statements:

I hold the position of:

☐ classroom teacher
☐ department head
☐ district curriculum head
☐ (associate) superintendent
☐ computer resource teacher
☐ building principal (headmaster)
☐ district computer coordinator
☐ district program evaluator
☐ other (please specify)____________________

I need to evaluate:

☐ a computer unit taught (for several days to several months)
☐ elementary ☐ jr. high ☐ sr. high to _____ students (total)

☐ a computer course taught (9 weeks or more)
☐ elementary ☐ jr. high ☐ sr. high to _____ students (total)

☐ computer instruction integrated into other course instruction
☐ elementary ☐ jr. high ☐ sr. high to _____ students (total)

☐ a set of computer courses taught in one school for grade levels
K 1 2 3 4 5 6 7 8 9 10 11 12 (Circle)
for _____ students (total) with _____ teachers (total)

☐ a district-wide computer education program for grade levels
K 1 2 3 4 5 6 7 8 9 10 11 12 (Circle)
for _____ students (total) with _____ teachers (total)

☐ other (please specify) ____________________ for grades
K 1 2 3 4 5 6 7 8 9 10 11 12 (Circle)
for _____ students (total) with _____ teachers (total)

Checkpoint 1 - 2

Why do an evaluation?

Check all of the reasons that apply. Add others if needed.

☐ I want to review my current computer units/courses/computer-related instruction to see what needs to be changed, if anything.

☐ We want to review a set of computer courses in one or several schools to see what might need to be changed.

☐ We need to review our goals and objectives to see if they are appropriate and if so, if they are being met?

☐ We want to see what type of teacher/staff training is still needed.

☐ We want to know if we have the appropriate hardware, software, or print materials for the students and teachers.

☐ We need to know if students are learning what's expected of them.

☐ We want to know how our district computer program is going.

☐ We know we need to change our computer instruction periodically to keep up with the new technology and new information in the field.

☐ We want to give our community some information about the program.

☐ We want to reinforce/extend the current computer education program.

☐ We may need to revise/restructure some of the program's components.

☐ The school district expects an evaluation of all new programs.

☐ The school board or funding agency has requested a report.

☐ Other (please specify)______________________________

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Section 2

THE COMPUTER EDUCATION PROGRAM

Before you can collect any data, you must develop specific questions that you want to answer in the evaluation process. Rather than ask questions about your computer education program in general, it is better to develop questions about certain aspects or components of the program. The more specific your questions are, the more able you will be to answer them.

The next few pages describe each of these aspects or components of a computer education program:

program goals and objectives
staff development
instructional materials
student achievement

In your school or district, there may be other components where you will want information. You can use the process described in this handbook for gathering and using information with those components as well.

This section is designed to help you look at each component more carefully and start to think about the questions you may want to answer. The checkpoints will help you determine what information you already have, and what information you need to gather, in the evaluation process. The sample forms will assist you in describing the "stage" of your computer education program and in thinking about the questions.

Program goals and objectives

Every computer education program is developed with certain goals in mind, although they may not be very explicitly stated. Any number of people may be the force behind the creation of the program. But regardless of the number, there was some system of beliefs or guiding principles that led them to formulate a set of goals and objectives.

The goals and objectives for your computer education program may or may not be written down somewhere. If they are not specificed in writing, you may want to start your evaluation by formulating or restating the goals and objectives. The program goals should be general statements about the opportunities for students participating in the program. Program objectives should be stated in more concrete terms. Here are several examples.

From a seventh grade computer literacy course:

Goal	Objective
To offer students the opportunity to use computers as tools.	Students should be able to use word-processing software to enter, edit and print out a simple document.
To help students learn the syntax of the BASIC language.	Students should be able to understand and use these BASIC keywords correctly: PRINT, LET and END.

...
..
.

And for computer instruction that is part of a fourth grade mathematics program:

Goal	Objective
To offer students the opportunity to learn and apply problem solving skills.	Students should be able to use the Logo language Turtle commands to draw shapes such as triangles and squares.
To have students learn about the history of computing devices.	Students will recognize and describe the following devices: abacus, calculator, microcomputer.

...
..

Goals and objectives change as computer hardware costs decrease, as the access to computers increases, as new programming languages or software packages become available, and as you see results and reactions from students. In schools where computer access is not readily available, course objectives center around history of computing devices, their social impact, computer careers, and what computers can and can not do. Schools that can provide more hands-on experiences with computers may place higher priorities on programming skills or on objectives related to software use.

Once you have goals and objectives written down, you will want to review them periodically. You may want to do any of the following:

1. prioritize a newly-defined list
2. find out if any objectives should be added to the list, revised, or deleted from the list
3. find out which of the goals and objectives are really being met as the program is implemented.

By evaluating your goals and objectives, you can offer the following information to the school:

1. A prioritized list of your objectives given the general educational philosophy of the school, the needs of the community, the access to appropriate instructional materials, or the extent of teacher training.
2. A comparison of the intended goals and objectives with those actually implemented or achieved.
3. Recommendations for keeping or changing any of the goals or objectives.

Staff development

Staff development is one of the most important components of the computer education program. Teachers must have a knowledge of computing and be able to use different teaching styles and materials. It is necessary for them to stay current with recent developments in their field and to seek professional growth.

As the amount of computer instruction and the number of computer courses in schools grow, school districts, state agencies, universities, and professional organizations are trying to provide opportunities for staff development and in some cases, special certification. Computer teachers are taking university courses offered at the undergraduate and graduate level. Some teachers are learning to program or to use application software through their school district's inservice programs. Many of the teachers become "self-taught" through their own computer programming experiences, use of computer software and intensive reading efforts.

While teachers need training and coursework to prepare for teaching computer units or classes, other staff members and people close to the program also need training and support. In many elementary and middle/junior high schools, the librarian or media specialist has been given the responsibility for giving computer instruction or setting up and maintaining the computer labs and software libraries. Some schools use teacher aides to work with students in the computer lab or in a resource room. The teacher aides' ability to assist students will depend on their training and preparation.

All staff people who work with students should be included in your evaluation. You may therefore want to include information about the assistance given to not only the teachers, but also the administrators, librarians or media specialists, and resource personnel such as teacher aides.

Staff Development (cont)

As the evaluator of a computer education program, you should be able to offer feedback to your audience about the following areas:

1. Information on the preparation of the teachers and other staff and the amount of additional preparation needed by each of them.
2. The extent to which the teachers are informed about the recent developments in computing, computer-related instruction and techniques for teaching computing.
3. Suggestions for training programs that would be valuable to the people involved.

Instructional materials

School personnel select and use computer hardware, software and print/non-print materials for use in computer courses. How will people know if the materials are being used, if those materials are satisfactory or when and how the materials should be changed?

The computer hardware, software and print/non-print materials seem to be changing at a faster pace than other types of instructional materials. Consider typewriters, athletic equipment, or books in other subject areas. They all seem to have a longer "life" in the classroom than computer materials. Schools need to make decisions regarding the computer equipment and materials so that their use is of maximum value to the students and not too costly for the taxpayers.

Many teachers are using material that they or their school district developed. Some educators have written software or developed lessons and worksheets for their own classrooms and then shared the material with other educators. What are the advantages and problems in using some of these "self-produced" materials?

Instructional materials (cont)

Your evaluation of the instructional materials can provide information such as the following:

1. A description of the actual procedure for evaluating and selecting the computer hardware, software and print materials.
2. The extent to which the computer hardware, software and print materials actually support the objectives of the program.
3. The extent to which the instructional materials are really used by the teachers or program staff.
4. Suggestions for purchasing additional or different materials or for changing the use of the existing materials.
5. Suggestions for making sure that the instructional materials are current enough to be of value to the students.

Student achievement

Teachers and parents want the computer education program to have a positive effect on the students enrolled in the program. They would like to know that the students were given adequate opportunitites to use the instructional materials and that the students learned something by using the materials.

The computer units or courses may affect the students' attitudes and/or their achievement. Many teachers and parents want students to feel in control of the computer and to have positive attitudes about the computer. How much you try to measure regarding attitude change will be determined by the importance of the attitude objectives in the program.

Student achievement (cont)

If you need to evaluate students on their accomplishments in the computer unit or course, your primary focus should be on evaluating the extent to which students attained each of the objectives set for that course. You may also be able to get information that shows that students learned things that were unexpected by the program planners or staff. This information about unexpected outcomes can be a very positive addition to your final report.

In general, the evaluation of student outcome should include information on the following:

1. Evidence that students are learning what is expected.
2. Identification of achievements that the program produced, but which had not been identified as program objectives.
3. Change in attitudes that the program produced, whether the changes had been planned or not.

Program stages

In most schools, the computer education program evolves and changes each year. The first few years are the developmental years of a program and, as such, are ideal times for doing formative evaluations. Each of the components change as the program is implemented. Goals and objectives are revised, (sometimes unconsciously) new staff needs will cause a redesign of the staff training sessions, and the quality and the quantity of hardware, software and print materials grows.

A computer education program will evolve in stages, as any educational program does. Teachers, students and materials are selected, the materials are used, courses are taught and materials then evaluated, formally or informally.

At what stage are the different components of your computer education program? Take,for example, the component called instructional materials. Have they just been selected, or are they in place and being used? Or, have the materials been used enough to be evaluated, for a decision about repurchasing next time?

Use ***Sample form 2 - 1*** to describe the stage of your school's program. The circles on the chart then provide you with a visual picture of your progress. If you were to do this every semester, or over some period of time, you would see the progress that your program is making.

Sample Form 2 - 1 *School* Pleasant Valley

What stage are you at?

Circle the stage of each component of the computer education program.

Component —— Program goals and objectives:

Stage:	[✓ Goals & objectives written]	Goals & objectives prioritized	Goals & objectives implemented	Goals & objectives evaluated

Component —— Staff development

Stage:	Teacher(s) selected	Teacher(s) trained	[✓ Teaching courses]	Training evaluated

Component —— Instructional Materials: Hardware, Software & Print Materials

Stage:	Computers selected	Computers in place	[✓ Computers used]	Computers evaluated
Stage:	Software selected	Software available	[✓ Software used]	Software evaluated
Stage:	Materials selected	Materials available	[✓ Materials used]	Materials evaluated

Component —— Student achievement

Stages:	Students selected	[✓ Students in classes]	Classes completed	Students evaluated

Program Needs

As you look carefully at the different components of your program, you will see that some components are at different stages than others. Because they are at different stages, you may discover that you have very different questions about each of them.

For example, during the first year of implementation, you may be so focused on learning how to use the computer hardware, software, or new print materials, that you would object to any evaluation that looks at student outcomes. You may feel that you need to become more computer literate yourself before you can do a good job of teaching computer literacy to the students. In this case, you may want to look at the other three components of the program: the goals and objectives, staff development, and instructional materials. Or perhaps you want to look at only one, such as the goals and objectives because of a short time period.

What is it that you want to know about each of the components? What is it that other people may want to know about the program? Start listing the questions that arise in your mind or from discussions with other people.

Create a list of questions by filling out ***sample form 2 -2***. These questions will direct you in your evaluation effort. You may ask other people in the school to fill out the form . For example, if you, as a teacher, will be evaluating a class or set of courses, you will want questions from your principal and some of the supervisors or administrators at the district level. If you are a district supervisor or the building principal, you will want the teachers to list questions as well. If the report is going to an outside agency, representatives from the group will want to have input at this stage also.

After you have received questions from all of the "interested parties", compile them into one major list. Categorize the questions into one of the four components of the computer education program on the sample form at the end of this section. Again, your computer education program may have additional components which you can add to the form. Or you can remove one or more of the components if you have a short period of time or do not want to evaluate a particular component.

Here are some sample questions from Pleasant Valley Junior High School:

Sample form 2 - 2 *School* Pleasant Valley

What do you need to know?

List the questions that you have about any of the followingcomponents of your computer education program.

Component	**Questions**
Goals and Objectives	1. Are we fulfilling our goals and objectives? 2. Should any of them be changed?
Staff Development	1. Is our staff development program doing what it should?
Instructional Materials:	
Hardware	1. Should we buy a different brand of microcomputer next year?
Software	2. How is our software working?
Print Materials	3. Are the books that we just purchased working well for our students?
Student Achievement	1 What are the students learning?

The questions that you are asking now will be further developed and used in your evaluation process. We will use these sample questions in Section 4 to help us outline an actual evaluation. But, as you will see in the next unit, some of these questions will be easier to answer than others.

Before going on to Section 3, do ***Checkpoint 2 - I*: What information do you have?** on the next page. This will help you plan your evaluation and later on, report the results.

Checkpoint 2 - 1

What information do you have?

Check the appropriate response and add to each of them as needed.

1. The program philosophy is that the computer instruction should be:

☐ "integrated" or "infused" with the other curricular areas
such as: ______________________________
at grades: ______________________________
☐ taught in distinct units /courses designed to teach computer skills
such as: ______________________________
at grades: ______________________________
☐ taught by means of: ______________________________
(describe)

2. A plan was written for the computer education program. yes no
If so, covering what period of what time? ______________
and written by whom? ______________________

3. Goals, objectives, or learner outcomes have been written. yes no
If so, for what grade levels? ______________________

4. Activites or lesson ideas have been written for the goals? yes no
If so, are they available to teachers? yes no
If so, have the activities or lessons been tried? yes no

5. The program has undergone changes since it started. yes no

If so, what types of changes? ______________________
____

6. Someone has expressed a need for evaluating the program. yes no
If so, whom? ______________________________
for what reason? ______________________________

7. The program has been evaluated before. yes no
If so, when: ______________________________
by whom? ______________________________

Sample Form 2 - 1 *School*____________________

What stage are you at?

Circle the stage of each component of the computer education program.

Component --- Program goals and objectives:

Stage:	Goals & objectives written	Goals & objectives prioritized	Goals & objectives implemented	Goals & objectives evaluated

---

Component --- Staff development

Stage:	Teacher(s) selected	Teacher(s) trained	Teaching courses	Training evaluated

---

Component --- Instructional Materials: Hardware, Software & Print Materials

Stage:	Computers selected	Computers in place	Computers used	Computers evaluated
Stage:	Software selected	Software available	Software used	Software evaluated
Stage:	Materials selected	Materials available	Materials used	Materials evaluated

---

Component --- Student achievement

Stages:	Students selected	Students in classes	Classes completed	Students evaluated

Sample form 2 - 2 *School* ____________________

What Do You Need to Know?

List the questions that you have or the questions that are being asked about each of the components of the computer education program.

Component	Questions
Goals and Objectives	
Staff Development	
Instructional Materials: **Hardware**	
Software	
Print Materials	
Student Achievement	

Further References ..... for Section 2

Bellack, A.A. and Kliebard, H.M. (Editors). Curriculum and Evaluation. Berkeley, CA: McCutchan, 1977.

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Section 3

PLANNING THE EVALUATION

An evaluation process must be thought out carefully from the beginning. Before you gather the information, you need to have your questions clearly stated and a process developed to get the answers.

The purpose of this section is to describe this process, giving you some general recommendations about the steps you should follow. The steps are the same whether you are evaluating a set of goals and objectives or you are evaluating all of the components of the computer education program. The amount of consideration you give each step or recommendation will depend on the depth of your evaluation.

The checkpoints at the end of the section will help define your task, especially if you plan to present a report.

Review of the purpose

In a formative evaluation, you are gathering and sharing information to help improve your computer education program. If your program is a new one to the school district, it is still in a developmental stage. During this stage, the staff will be revising the program to meet their particular teaching situation. All new computer hardware, software and print materials need to be reviewed. No one is really sure how well the students in the computer education program will meet the objectives of the program.

This developmental stage is an excellent time for a formative evalution. As the evaluator at that stage of the program, you can provide information to the school staff that will help improve the program. By working with others in your district, you can collectively determine how the program is really working and what progress is being made. You may, in fact, help develop the program by more clearly conceptualizing the program or by helping students meet the objectives of the computer education program. A good formative evaluation also lays the groundwork for a summative evaluation at a later date.

General guidelines

There are certain steps you should take and guidelines to follow in doing a formative evaluation. While the process may vary from school to school, there are common elements to any evaluation. These are listed here as six major points.

1. Know what information you must provide.

Remember that the person or group of persons that want the evaluation done, ultimately determine what information is needed. If the primary force behind the evaluation is not you, then you must know exactly what the person (or group) wants to know.

If you are, however, trying to evaluate courses or units that you are teaching, and the information is for yourself, you have a great deal of flexibility. The same thing is true if you are doing the evaluation as a "volunteer" effort, where no one is expecting any specific information to be gathered. You can ask the questions you want answered, and proceed to answer them.

If the evaluation is required because a course is new or greatly revised, the district may have a standard procedure that is to be followed. Make sure you know what that process is, as well as what the report should look like. In the same vein, if the report is going to a funding agency outside the school, that agency will have expectations about the type and amount of information that you gather. Know what those expectations are.

2. Know what procedures you must follow.

Does the school have an evaluation procedure for you to follow or a form that must be filled out when the process is completed? If so, you need those documents before you begin.

The questions being asked will determine the procedures to be followed. However, you want to make sure that all of the information that you collect is useful to the school and you want to make sure that you collect all the information that your audience wants.

Sections 4 and 5 will help you ask the right questions and select the appropriate tools which will also help establish the procedure.

3. Remember who the primary audience is for the evaluation.

Will your results go to the building principal, all of the program staff, the school board, or will it go to a lot of other people as well? Regardless of how many people will be reading or listening to your report, the evaluation will be focused towards one primary group of people - the people that want the information. Those people become your primary audience. Every decision should be made from the perspective of this audience as you collect the data, use the information, and especially as you write the report.

4. Know what the evaluation actually means to the school.

You need to make sure that the results from you evaluation will be used in the way you intend. For example, you may be planning to gather information that will validate the appropriateness of the program's goals and objectives. You plan to use that to suggest some revisions in those goals for the next year. Your audience may be seeking information that gives them the reason to continue or not continue the program another year.

Make sure that a formative evaluation is the right process to get at the information that they want and that the results will be used as they are intended: to help monitor and improve the computer education program.

Will your audience expect to get only positive information back from you? Are there certain things that they don't want to know about? An evaluation report that focuses on the steps for program improvement could come across as an indictment of the present program. Make sure that you understand how the audience will react to the positive aspects of your report as well as the suggestions and recommendations that you make.

Last, but not least, the more that the evaluation means to the school, the more support it should give you in doing the evaluation. If you are evaluating your own classes, you can probably gather and summarize the information during school time. You will need, however, access to a typist or a word processor and computer for producing the report.

Before you actually proceed, make sure you have allowed not only enough time to gather the information but plenty of time to think about the information and summarize it. Additional time is needed to make your recommendations and then write and re-write a report.

5. List what you are expected to do in writing.

A short written description of your purpose and process will help you focus the evaluation in its beginning stages. This description will also help you communicate with the participants during the process and serve as a introduction to the report that you will prepare.

Describe these expectations, first for yourself, and then for the others involved in the evaluation. This description can serve first as a discussion guide, and then as a basis for describing the evaluation process in your report at the end. The description of your tasks should also clarify the nature of the evaluation - that it is formative and not summative, and the comprehensiveness of it. With this description, it will be easier, each time you speak with someone new, to explain the purpose and process of your work.

See the Feedbacks at the end of Section 3 concerning the tasks and the report. You should also be deciding on the type of report that you will present and when you should do this. The very last section of the Handbook also outlines a typical report for you.

6. Find out what your audience will accept as credible information.

As an evaluator or part of an evaluation team, you must be neutral enough to the program to be able to describe whatever positive or negative findings that surface. Your friendships or working relationships with the computer education program staff should not constrain you.

The people to whom you are reporting the information will also need to understand that the breadth and depth of your information will be determined not only by the amount of time you can devote, but also by any constraints on who, where, and when you can gather data, and by any limitations on what you can ask. Find out early what people, sites, and topics are off limits to you.

Does your audience want you to present some quantitative data as well as qualitative narratives? If you want the readers of your report to feel like they have "been there", then you need a rich description of the program with lots of anecdotes. If the audience wants to see "hard data" or tables, questionnaire results, achievement graphs, you need to know that from the very start. Checkpoint 2 at the end of this section will help you reach agreement on the reporting style.

Steps of the process

There are two major steps in the evaluation process: to gather the information and then use the information. Each of them needs to be described in much greater detail and you will see that description in sections two and three respectively. Here, however, is a brief outline of the steps as an overview.

A. Gathering the information

This is divided into three different steps and explained more fully in the middle unit of this Handbook.

1. Developing the questions

Here you will try to formulate good questions about each of the components that you wish to review. You will need to develop questions that are both relevant and specific.

2. Selecting the tools

After reviewing the different types of tools that you can use, you will need to select the most appropriate ones for your evaluation purposes.

3. Designing and using the tools

You will probably have to "customize" some of the tools you want to use, unless you are lucky enough to have some that will work already. As soon as the tools are ready, you will be able to collect the information that you want.

B. **Using the information**

This part of the process is described more completely in the last unit of this Handbook and can be separated into three different steps.

1. Summarizing the data

Since each of the tools that you use will yield a considerable amount of information, you will need to summarize it in simple but descriptive terms. The type of report you will be providing will determine the manner in which you do the summarizing.

2. Developing the recommendations

While this may not be an easy task to do, it is an important one. Your recommendations can help improve the computer education program.

3. Reporting the results

Keeping your audience in mind, you need to present the results of your work to other people, either verbally or in a written format. Any documents you produce will prove quite valuable in the future.

Additional considerations

In planning a formative evaluation, there are other considerations to keep in mind that have to do with the special characteristics of schools. Here are some considerations that have to do with the special aspects of not only schools, but also a computer education program.

Think about the setting in which the computer education program is trying to operate. There are uncontrollable situations in the school environment that affect the implementation of any program. For example, goals and objectives that were written before a school bond issue defeat could be impossible to attain because the materials did not get purchased and the students did not get the planned access to the hardware and software.

What are the characteristics of the students involved in the computer education program? Perhaps every eighth grade student is required to take a semester's BASIC progamming course. What if you discover that the high ability students seem to be doing the work satisfactorily or like the course, but that the average and below average students are having a more difficult time? You may want to collect ability information on students so that you can verify the discovery or back-up any inferences that you make.

Think about the characteristics of the program itself: the materials, activities, and administrative arrangements and how they are working. In formative evaluations, you pay most attention to the characteristics that cause the most problems or that might require alteration. However, keep thinking about ways in which you can detect the benefits as well as the problems of the program. You can uncover nonobvious but important indicators of program impact by asking participants during the course of the evaluation about the changes they see occurring. Allow time during your evaluation process to check out the generality of these teachers' statements or to test a sample of students so that you can support the claims that are made.

Do try to focus on the extent to which the program goals have been achieved. Try to detect any goals that may be unspoken or unwritten but seem to surface. Make sure that all the program's important objectives have been stated.

Some hoped-for outcomes are so long range that only a three to eight year study would establish that the outcomes had indeed occurred. It would be impossible for you to determine the success of a goal such as the "ability to use computers on the job" in a few weeks or months time, unless the students are also working part time while enrolled in the computer education program.

A final practical tip is to try to get other people to help you collect data. Think about data that might be collected anyway. For example, the the computer teacher will have tests, class records, student sign-up sheets, or lesson plans. Check to see what evidence of program achievement can be inferred from any of these documents and to what extent it will help you to at least provide a variety of information to the audience. You might want to persuade teachers to establish record keeping systems that will benefit both your evaluation and their instruction. Also, the computer teachers involved in the program or other teachers in the school may be willing to collect data for you or with you because of a course they are taking or a project they are doing for a degree program.

The next task

The set of checkpoints at the end of this section are designed to help you do the planning discussed in this section. Use these checkpoints as a guideline in working with the school as you plan and implement the formative evaluation of the computer education program.

Use ***Checkpoint 3 - 1*** on page 3-10 to help you look at the next steps in the evaluation process. You may want to discuss these statements with other people in the school.

Use ***Checkpoint 3 - 2*** on page 3-11 to help you plan how you will do a report. This will also help in developing the questions and in preparing the report later.

The checkpoints by no means include all the considerations that go into the decision making of the tasks or in the final report. They will however, serve as a way of getting started with each process and as a basis for communicating with any other people. Discuss the checkpoints as needed with others so that you are clear about your task.

Checkpoint 3 - 1

What are the steps?

Summarize the steps in your evaluation.

1. I am going to answer questions about these specific components of the computer education program:

goals and objectives	yes	no
staff development	yes	no
instructional materials	yes	no
student achievement	yes	no
other ____________	yes	no

2. I will gather information during this time period to respond to the questions about the program: ____________ to ____________

3 I will gather data in this site or set of sites

School(s) ____________________________

Grade level(s) ____________________________

Course(s) ____________________________

4. I will summarize the information during this time period:

____________ to ____________

5. I will use the information summary to make recommendations for the next stage of the computer education program. yes no

6. I will prepare a report to the school following a format that:

_____ is pre-designed _____ I will develop

7. I will do the following tasks in addition to those listed above:

____

Checkpoint 3 - 2

What will the report be like?

What information will you have in the report to the school and how do you plan to present it? Complete the page as you can at this point.

1. The primary audience is ______________________________

2. Will there be: a final written report? yes no due __________

interim reports? yes no due __________

oral presentation(s) yes no due __________

3. Information that is to included:

summary of findings yes no

history of program yes no

description of these components:
goals and objectives yes no
staff development yes no
instructional materials yes no
student achievment yes no
other ______________ yes no

description of evaluation process:
how questions were developed yes no
how tools were selected or designed yes no

summary of the data yes no

set of recommendations yes no

4. Presentation style should be: (circle those that apply)

formal
informal

technical
factual

descriptive: with anecdotes
with student work

Further References ..... for Section 3

Bellack, A.A. and Kliebard, H.M. (Editors). Curriculum and Evaluation. Berkeley, CA: McCutchan, 1977.

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UNIT 2

GATHERING THE INFORMATION

Planning the Evaluation

Gathering the Information

Using the Information

4. Developing the questions
5. Selecting the tools
6. Designing and using the tools

This unit describes a process for developing the questions that you will try to answer in your evaluation, and then helps you decide on the tools you will need to gather the information. Each section takes you, step-by-step, through a process for first asking and then answering your questions. The checkpoints and sample forms in each of the sections are tools for you to use or to customize in gathering the data. They also provide a structure for developing the recommendations in the next unit.

SECTION 4

DEVELOPING THE QUESTIONS

Section 4 is designed to help you develop questions that are relevant and specific so that you can gather the appropriate information.

The section takes you through the process of developing questions around each of the major components:

goals and objectives

staff development

instructional materials

student achievement

You can, however, work through only the components that you are interested in reviewing at this time. You can use the forms at the end of the section to help complete the tasks that need to be done at this point.

Note: Section 4 continues to use the computer education program at "Pleasant Valley Middle School" to exemplify the steps in the evaluation process.

The importance of good questions

As you start the process of gathering the information, you will realize how important it is to have good questions developed. Your questions not only clarify the nature of your evaluation but also help determine the types of tools or instruments that will you use to gather the information.

How does the nature of the questions determine the type of evaluation that you do? Suppose that someone wants to know the response to this question:

" What should our computer education program try to do?"

You should respond to that question by doing a needs assessment; that is, surveying parents, community members, teachers, and administrators and asking them to prioritize a set of goals or objectives. But while a needs assessment is an important process, it should be done in the planning stages of a computer education program, not the implementation stage.

Here is another question you may receive:

"Is our computer education program worth continuing?"

The response to this question would be formulated by doing a summative evaluation. As described in Section 1, a summative evaluation helps describe the end results of a program or the degree of success after the program has been implemented and refined.

If a computer education program is in an initial stage of implementation and you want to see what kind of progress it is making, you want to have questions that can be answered with a formative evalution. The important questions for your school, therefore, are those that ask about the progress of the computer education program for the sake of improvement.

The next part will help you revise questions so that they can be used to do a formative evaluation.

What are good questions?

Put very briefly, evaluation questions are "good" when they are both relevant and specific.

A question is relevant if it asks about the progress of the various components of the computer education program. It can then be answered by a formative evaluation process. It is also relevant if the school or community really wants to know the answer to it.

If a question is relevant, the response to it will be beneficial to you and your school(s). A response to a relevant question will also help improve the program by helping you develop the appropriate recommendations regarding the program at the end of your evaluation.

A question that is specific can be answered more easily than one that is too general. Specific questions enable you to select or design the appropriate tools to gather the information and then summarize it

Take for example, this question being asked by parents of the Pleasant Valley Middle School:

> "How is our computer education program doing?"

This question, while a relevant one, needs to be re-formulated into a set of related but more specific questions. For example:

> "Is the program fulfilling its goals and objectives?"
>
> "Is the staff development process meeting the needs of the teachers and others working with the program?"

The next few pages describe some of the types of questions you may want to develop about the components of the computer education program.

Again, you may want to select only one of the components to review at this time. If that is the case, you will complete level one of the evaluation process: to gather information about the goals and objectives of the program. If you want information about more of the components, you should work through the second level of the process. As discussed in the introduction to the handbook, a longer period of time will allow you to gather third level or more in-depth information about the program.

You may also want information about other aspects of the computer education program. In this case, treat your additional aspect (or component) in the same way that the handbook treats the four used here: goals and objectives, staff development, instructional materials, and student achievement. Regardless of the number of components, the process is the same for developing relevant and specific questions.

Developing questions about goals and objectives

Computer-related goals and objectives in the curriculum seem to change more rapidly than those in the traditional subject areas. There are two reasons for this rapidity of change. First, because the curriculum is new and evolving. There is no set of core objectives agreed-upon by everyone in the field. There has been no recognized national professional computing orgnaization of computer teachers and educators that has set guidelines for such a curriculum.

The change in computer-related goals and objectives also occurs because of the change in access to computers in schools. Certain objectives are now reachable because of increased access to hardware and software or to new types of hardware, languages, and software. Other objectives become reachable when the staff is sufficiently trained or when the administration supports the development of a new course or program.

Section 4 - Developing the questions

If there are program goals and objectives in existence, the two most fundamental questions related to this component are probably:

1. Is the program fulfilling its goals and objectives?
2. Should the set of goals and objectives (learning outcomes) be changed in any way?

These questions could be refined even further so that responses are more easily formulated:

a. Does the program staff believe that each goal, objective, or learning outcome is being met?

   If so, how well? or how was it accomplished?
   If not, why not?

b. How does the set of actual objectives (learning outcomes) compare to those intended by the program planners?

c. Is each goal/objective/learning outcome consistent with the school's educational philosophy, the access to instructional materials, or to the extent of staff training?

d. What goals/objectives/learning outcomes should be added to the program, revised for the program, or deleted from the program?

These questions are relevant both to the computer education program and to a formative evaluation. They are also specific enough to be answered with some of the typical evaluation tools or instruments. These tools will be discussed in Section 5.

If you intend to only review the program goals and objectives, you can proceed to "Your next task" at the end of this section. Then work with the checkpoint and sample form, using your questions about goals and objectives.

Developing questions about staff development

The questions regarding staff development should be designed to include all the program staff involved in the program. This includes the classroom teachers, resource aides, librarians or media specialists, administrators or coordinators, and resource (computer) room personnel.

The questions also have to account for the manner in which the school is implementing the program goals and objectives. For instance, Pleasant Valley's computer literacy teacher needs a different background and preparation than their English teacher who wants to integrate word processing activities into the eighth grade writing course. The computer literacy teacher may need undergraduate or graduate courses in computer science to be able to teach some of the topics in the new state-mandated curriculum. He or she must be informed not only about computer-related terminology, computer uses, history, careers, the process of programming, trends in software use, and future technologies, but also be aware of and be able to use some of the techniques for teaching computing. The English teacher's purpose is to help students use writing tools like word-processors, ideas processors, spelling and grammar checkers, to help the students write better papers. The training for Pleasant Valley's English teacher needs to prepare him or her to do just that.

The questions for this component should also reflect the fact that the training and preparation will change as the computer access and computer education program goals and objectives change and as new instructional materials become available.

Here are several good questions about the staff development process:

1. How well prepared is the staff to carry out their respective tasks in the computer education program?
2. Does the staff need additional or different types of training?

Again, these questions might be further refined:

a. Was the staff given the training that was planned?
   If not, why not?
   If so, was the staff reaction?
   What was the most successful aspect of the training? Why?

b. How did the training assist the staff in implementing the program goals and objectives?

c. What type(s) of additional training, if any, is needed by the staff?

d. How should the training or inservice work be changed for the next year?

If you are only looking at your staff development process or at the first two components (goals and objectives and staff development), you should proceed to the end of Section 4. If you wish to review your instructional materials and/or student achievement, then proceed onto the next portion of this section.

Developing questions about instructional materials

Questions about instructional materials, whether it be hardware, software, or print/non-print materials, typically fall into one of these categories:

1. How well are the materials working that we now have?

2. What other materials are needed to carry out our program goals?

To make the questions more relevant and specific, you can first rewrite them so that they relate to the categories of materials that you are reviewing; probably the computer hardware, computer software, print materials and possibly non-print materials.

Section 4 - Developing the questions

Again, the questions should reflect the changing needs concerning the instructional materials. For example, last year, Pleasant Valley's computer literacy class spent the semester programming in BASIC and used a book that helped them do just that. This year, the class spends less time programming and, instead, uses application software packages in order to learn more about computer use. The teacher and students now need new print materials that reflect the new objectives being taught and some new and appropriate software with which to work.

Pleasant Valley's English teacher will also want to re-evaluate the instructional materials used for the writing course to see how well the materials serve the computer-related goals and objectives.

Indeed, if the computer education program goals are "integrated" into some or all of the other subject areas, it seems that all of the materials used in those courses will need to be evaluated. It also seems that each year, the instructional materials for a computer class should be reviewed carefully to see if and how they are supporting the program goals.

Here are some more specific questions pertaining to the instructional materials component of your program:

a. Were all of the instructional materials purchased as planned?
   Were they made available to the teachers and students as planned?

b. How well do each of the instructional materials (hardware, software packages, and print materials) support each of the program goals, objectives and/or learning outcomes?

c. Exactly how are each of the materials being used?
   What seems to the most successful experiences and why?
   Which experiences or activities are not satisfactory and why not?

d. What additional materials are needed to support the goals of the program and why?

If you want to work with the last component (student achievement), proceed on to the next page. Otherwise, go to the end of Section 4.

Developing questions about student achievment

The component of student achievement is an area of concern to parents, administrators and teachers. Everyone wants the computer education program to have a positive effect on students. The teachers involved in the program, however, may have an additional concern about this component; that is, that the students may be evaluated too early in the implementation of the program. Teachers feel that how much or what the students learn is a reflection on them as teachers - indeed that the evaluation of their students may turn out to be an evaluation of their teaching.

Somehow, the evaluation questions about student achievement need to take these teacher concerns into account. The questions also need to acknowledge the length of time that teachers have had to become prepared for their new roles. The questions must also acknowledge the amount or lack of access that students have to the appropriate instructional materials and the agreement or lack of agreement on a specific set of goals and objectives for a new unit or course.

Another guideline for developing appropriate questions about student achievement is to divide the questions into three areas: cognitive, affective and psychomotor. It will then be easier to determine what process you will use to measure change in these various behaviors. For example, Pleasant Valley's English teacher could use examples of student work with the word processing software, showing first drafts, revisions, and then the final draft of the work. The computer literacy teacher may want to use paper and pencil tests that cover the computer terminology, history or careers and then use programming projects and assigments to show achievement for the objectives related to programming.

But whichever the direction that you may go in measuring student achievement, most questions relate to these two general questions:

1. Are students learning what we expect them to?
2. What are they learning that we did not expect them to?

Again, these questions can be refined so that they are more specific and relevant to the formative evaluation process. Here are some examples:

a. Did the students have the opportunity to attain the goals/objectives/ learning outcomes for the unit or course?

   If so, how?
   If not, why not?

b. How were the students assessed to see what kinds of changes had occurred?

   What were the results of the various assessments?

c. What did the students achieve that was not planned or identified as an original program objective?

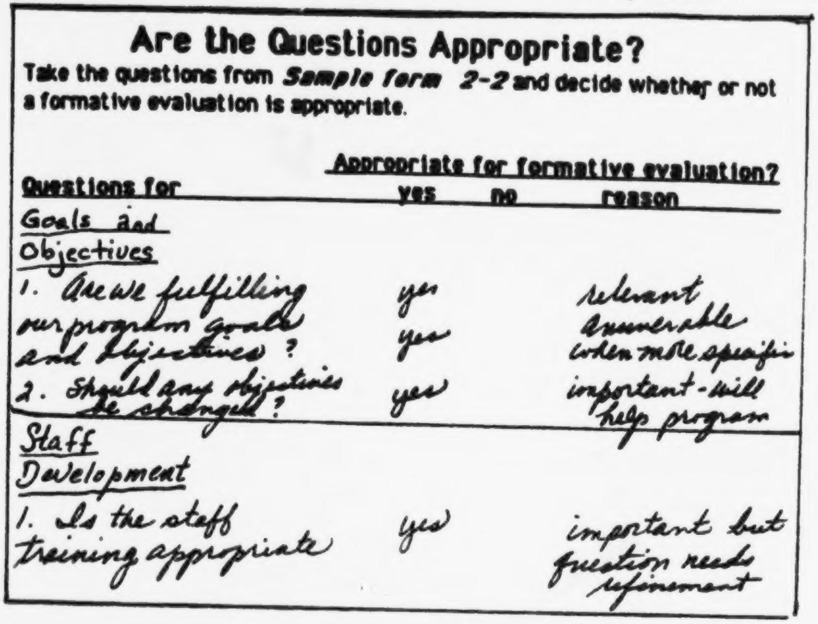
   Should any of these achievments be reformulated and included in the set of expected outcomes the next time?

Again, the decision to review student achievement can be a problematic one and the evaluation must be done carefully. While it does not have to be formal or statistically-based, the questions should lend themselves to direct acquisition of evidence that your audience will accept as believable and important.

Your next task

The checkpoint and sample form at the end of this section are designed to help you review and, if necessary, revise your questions about the computer education program.

Use **Checkpoint 4 - 1: Are the Questions Appropriate?** to review your questions. If you want to review only your goals and objectives at this time, then list only the questions related to that component. As an example, the following portion of the Checkpoint is shown for some of the questions about Pleasant Valley's computer literacy course.

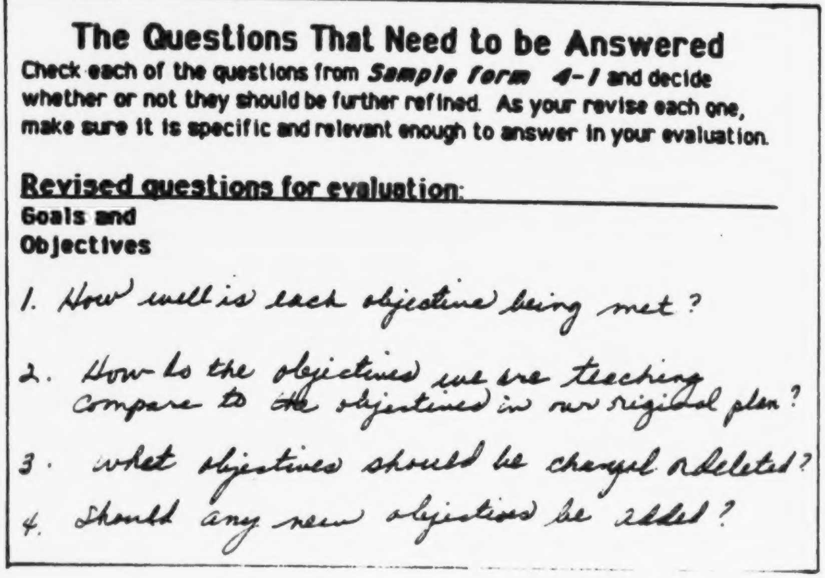


Are the Questions Appropriate?

Take the questions from *Sample form 2-2* and decide whether or not a formative evaluation is appropriate.

Questions for	Appropriate for formative evaluation?		
	yes	no	reason
Goals and Objectives			
1. Are we fulfilling our program goals and objectives?	yes yes		relevant answerable when more specific
2. Should any objectives be changed?	yes		important - will help program
Staff Development			
1. Is the staff training appropriate	yes		important but question needs refinement

Use **Sample Form 4-1: Questions That Need to be Answered** to refine and revise your questions from the previous Checkpoint. Again, Pleasant Valley's questions are shown here as an example.



The Questions That Need to be Answered

Check each of the questions from *Sample form 4-1* and decide whether or not they should be further refined. As your revise each one, make sure it is specific and relevant enough to answer in your evaluation.

Revised questions for evaluation:

Goals and Objectives

1. How well is each objective being met?
2. How do the objectives we are teaching compare to the objectives in our original plan?
3. what objectives should be changed or deleted?
4. Should any new objectives be added?

Checkpoint 4 -1 *School* ________________

Are the Questions Appropriate?

Take the questions from ***Sample form 2-2*** and decide whether or not a formative evaluation is appropriate.

	Appropriate for formative evaluation?		
Questions for	yes	no	reason
Goals and Objectives			
1.			
2.			
Staff Development			
1.			
2.			
Instructional Materials			
1.			
2.			
Student Achievement			
1.			
2.			

Sample form 4-1 School ______________

The Questions That Need to be Answered

Check each of the questions from *Sample form 4-1* and decide whether or not they should be further refined. As your revise each one, make sure it is specific and relevant enough to answer in your evaluation.

Revised questions for evaluation:

Goals and Objectives

1.

2.

3.

Staff Development

1.

2.

3.

Instructional Materials

1.

2.

3.

Student Achievement

1.

2.

3.

Further References ..... for Section 4

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Section 5

GATHERING THE INFORMATION

As an evaluator you will have to make some decision about the way in which you will gather information about the computer education program. You have, of course, some standard tools from which you can select. These tools are described in this section. With this information, you can determine which of the tools you may want to use in your evaluation.

Section 5 first describes some of the most common tools: questionnaires, observations, interviews, document reviews, and tests. Each description also includes each tool's potential for helping you respond to questions about the computer education program.

Several approaches are then discussed to help you select the most appropriate tools. The checkpoints and sample forms are available to help you decide which tools to use to respond to your questions.

Questionnaires

Questionnaires are typically used to gather demographic data or to solicit opinions or attitudes. In gathering information about the computer education program, you may design questionnaires that could help you to do any of the following:

1. prioritize the goals and objectives of the program.
2. find out what types of training the computer teachers need.
3. review the instructional materials used, including the computer hardware and software as well as all the print materials.
4. check the parent's, student's, or teacher's perceptions on the effectiveness of the computer education program.
5. get suggestions from the students, principals, and teachers for improvements to the program.

The questionnaires may be designed as a set of questions, a checklist, or a form to fill out. The responses in the questionnaire could be open-ended where the responder writes as much as he or she would like. Responses on a questionnaire could also be a simple rating scale, such as 1 2 3 4 5. In this case, a number response helps quantify the degree to which people agree or disagree with a statement. The way you want to analyze the data will also dictate the structure of the questionnaire.

Observations

You would use an observation instrument when you want to gather data such as equity of access or student or teacher behavior. In monitoring the computer education program you may want to design observation forms to do things such as:

1. describe student behaviors while using a computer.
2. check for any difficulties that students or teachers may have with the hardware, software, or print materials.
3. find out if a teacher's teaching style or classroom procedure changes when computers are in the room.

An observer can choose to record information "live" by sitting in the classroom or to gather the information by viewing a videotape that was done of the classroom. A videotape can be viewed by different people, producing perhaps a more consistent or more reliable description of what happened. The videotape can also be replayed by the observer, as many times as needed, and the observation information recorded more reliably. The person appearing in the classroom with a camera, however, is often more obtrusive during the beginning of the class period than a visitor sitting quietly in the back of the room.

If you are going to use an observation form, you will need to set up guidelines for interpreting what you observe in the classroom. If you choose to record, for example, student behavior as off task/on task, you need to be very clear about what constitutes "off task" vs " on task" behavior. You need to record a given behavior one way consistently throughout the class period and throughout all of the periods that the particular observation form is being used.

When several people use the same observation form to record behavior, it also calls for the same level of agreement on what those behaviors and how they should be coded. If observers are coding off task/on task behaviors for a sample of students in various classrooms, the observers must agree on the behaviors that are considered off task and those that are considered on task.

Interviews

A straight-forward and common method of getting information from people is to conduct interviews. Interviews are helpful when you want in-depth information from a small number of people. Interview questions could help you to :

1. determine the perceptions that teachers, students or principals have about their computer education program.
2. get suggestions from teachers, students and parents for changing the program's philosophy, goals or objectives.

3. obtain comments from teachers regarding the instructional materials used in the computer classes.
4. find out if the current testing methods are adequately measuring the student performance levels at computer use.
5. disclose what students take away or learn from an activity in the computer lab.

Interviews permit the evaluator to follow-up on responses at any point in the discussion. This "branching" capability can result in more detail about a topic or question than a questionnaire sometimes does. It does take more time though, to gather information from people in this way. In addition, it isn't as easy to quantify the information on an interview as from a questionnaire. Interviews can also be recorded to save time and for more thorough analysis later. The tape recording permits the interviewer to concentrate on the responses and on follow-up questions as opposed to writing down everything that the interviewee says.

Another way that interviews can be used is in forming the basis for a questionnaire or observation form. If, for example, you discover in a series of interviews with teachers that they all think that the students at the computer are more often "on task" than students using other instructional materials, you could design an observation form that helps you track that student behavior.

Document review

Reviewing written records or documents can also yield important information. These documents could be any of the following:

the program proposal to school board or funding agency
the computer committee's planning report
the curriculum scope and sequence
student sign-up or schedule sheets for computer use
teacher-made tests and/or student test scores
the computer teachers' lesson plans/assignments
student projects during different stages of development

Reviewing these documents will help you determine:

1. the original goals and objectives of the program
2. patterns in computer use (time on a computer, male-female use, grade level, or subject area use)
3. differences in the program as it was originally planned and as it was implemented.

The major advantage to this form of gathering information is that the "forms" are already designed, available, and have been used to gather the information. Much of the work is already done for you!

Tests

Tests can be used to describe some of the student outcomes of your computer education program. Few standardized instruments are available or even needed for the formative evaluation process you are using. Of more use are tests which evaluate the student performance on the computer education program's objectives.

These tests can be developed by the teacher or purchased from some publishers. These tests are called criterion-referenced tests because students are evaluated on a "criteria" or how they respond to questions correlated to specific objectives. These tests not only help you determine if students reached the desired outcomes while part of the program, but it will also give your some indication of the appropriateness of the program's objectives.

Some of the questions that can be answered through the use of tests are the following:

1. What objectives were reached by the students enrolled in the computer education program?
2. Are each of the program objectives "reachable"?
3. Are students learning what is expected on them?

Tests can be administered with paper and pencil materials, the computer itself, or through responses to oral questions. If you want to show student achievement gain during a given time period, then you may want to give pre-tests and post-tests to the students. In cases where you want to show that the students mastered the program objectives, scores from the unit or chapter tests may be sufficient.

The unit/chapter tests are usually available from major publishers who offer textbooks for computer courses. Check the print materials being used or catalogs from the publishers of your materials to see if such tests are available.

Selecting the types of tools

To select the "right" tools with which to evaluate your computer education program, you need to look at the questions you want to answer and consider the appropriateness of each tool. Besides having a distinct set of purposes, each of the tools have some relative advantages and disadvantages, given the size of your groups and the types of questions you are trying to answer. For example, to save time and to be able to quantify the responses, you may give questionnaires to a large number of people as opposed to interviewing them. Or you may choose to review written records of computer use rather than rely on teacher or student recall during an interview.

The following chart summarizes some of the major advantages and disadvantages for each type of tool that has been described so far. Remember, that it is not as important for you to choose the "right" tool as it is for you to develop the tool as best you can and to then use it as appropriately as you can. Almost any tool can help you get responses to the kinds of questions you have been developing.

TOOL	ADVANTAGES	DISADVANTAGES
Questionnaire	- easy to administer - convenient for large numbers of people	- depth of information limited
Observation	- yields information for "hard-to-test" aspects	- time consuming - labor intensive
Interview	- responses can yield more detailed information	- time consuming - labor intensive
Document Review	- forms already designed - information previously gathered	- may not be complete if gathered before questions known
Test	- easy to administer - results easily accepted	- not readily available

How do you make the decision about the tool or set of tools that you should use for your evaluation? A chart like the one below can be used to help plan your evaluation. Again, if you are only reviewing your goals and objectives, then work with the first row only. A full size form is shown at the end of Section 5.

Tools Components	Questionnaire	Observation	Interview	Document Review	Test
Goals and Objectives					
Staff Development					
Instructional Materials					
Student Achievement					

Any of the tools could be used to give you some information about any of the four components. However, a tool may lend itself to one or two components in particular. Tests, for example, need only be used to gather data about student learning outcomes. The student component, however, should be described with the help of several tools. Student behaviors, for example, could be described after using an observation form or a questionniare. It really depends on the question you are asking. This next portion discusses two approaches for selecting your tools.

Step one:

The first step in selecting your tools is to list each question that you want answered and then describe one or two methods for answering each of the questions. You then group the questions together that can be answered by the same type of an instrument, such as a questionnaire. It is probable that one questionnaire could contain enough items to help you respond to several of your major questions. For example, if you are giving a questionnaire to the district's computer teachers, you could ask about the attainment of the program goals and objectives, the value of their staff training and the use of their instructional materials. If you don't combine some of your questions, you will have too many instruments to be able to administer them all within your evaluation period!

Here are some sample questions from Pleasant Valley and some of the tools and processes that they chose to respond to each question:

Question	Tool/Process
1. How well is each objective being met?	**Questionnaire**: Give to teacher(s) and staff in program.
2. How valuable was the training to the program staff?	**Questionnaire**: Give to program teachers and staff. **Interview**: Conduct interviews with people who received training.

Question	Tool/Process
3. How well do each of the instructional materials support the objectives of the program?	**Questionnaire:** Give to program staff using the materials.
4. Did students have the opportunity to attain each course goal?	**Document Review:** Review lessons plans, computer sign-up sheets.
	Questionnaire: Give to teachers and students in program.
5. Did student behavior change when they used the hardware or software?	**Observation:** Record student behavior on and off the computer.

Step two:

You may decide in selecting tools that you want two different methods for gathering data for each of the questions or, at least, for each of the components you have questions in. Using two different sets of tools will help verify the results of each method, especially if the results are consistent. Two approaches may also yield complementary information.

To structure this process, you look at each component, the questions that have been asked in that component, and the tools that would be the best vehicles for gathering the information. You then decide how you can put some of the questions together to be answered by one instrument. An example from the Pleasant Valley Middle School is shown later as an example for you.

Your next task

By this time you should know all of the questions that are being asked. You should have some sense of the types of tools that could be used to answer your questions and which ones may suit your purposes best.

Complete *Checkpoint 5-1* on the following two pages if you want help in selecting the appropriate tools for answering questions in the different components. Work with other people in your school(s) and discuss the types of tools you think are appropriate to get their reaction and support.

Again, if you are only working with your goals and objectives at this time, list only the questions for that component. The information that you put on this checkpoint can also serve as background information for your report, if you choose to write one.

Use the sample forms at the end of this section to decide how your questions should be answered. Again, you should also use them as discussion points with others in your school(s) so that the evaluation is a mutually beneficial process for all those concerned.

Use *Sample form 5-1: Selecting the Tools* to decide, on a question-by-question basis, how your questions should each be answered. You would complete this just as the recent example from Pleasant Valley.

Use *Sample form 5-2: Organizing the Tools* to see the structure of your evaluation. The Pleasant Valley situation is shown as an example for you. As you look at the chart, you can see how many tools they will need to actually prepare. In this case, the people in Pleasant Valley did decide to use two different methods of responding to each questions to "check" on each response. Their questions for each component are the same as those developed at the end of Section 4.

Sample form 5-2

School Pleasant Valley

Organizing the Tools

Tools Components	Questionnaire	Observation	Interview	Document Review	Test
Goals and Objectives	Quest #1			Rev:lesson plans computer time	
Staff Development	Quest #1		Int #1		
Instructional Materials	Quest #1		Int #1		
Student Achievement		Obser #1		Rev: student projects	Use chap/ unit tests

Again, your chart will include only those components in which you have questions.

Checkpoint 5 - 1

Which tools are appropriate?

Which tools are you going to use to answer your questions about the different components? To help decide, state each question, then decide which tool is appropriate and list the reason why or why not. Duplicate this form so that you can work with each of your questions.

Goals and Objectives

Question:____

____

Tool	Appropriate?	Reason
Questionnaire	yes no	
Observation	yes no	
Interview	yes no	
Document Review	yes no	
Test	yes no	

Staff Development

Question:____

____

Tool	Appropriate?	Reason
Questionnaire	yes no	
Observation	yes no	
Interview	yes no	
Document Review	yes no	
Test	yes no	

(continued next page)

Checkpoint 5 - 1

Which Tools are Appropriate? (cont)

State each question that you have about these components and decide which tool is appropriate to use.

Instructional Materials:

Question:____

____

Tool	Appropriate?	Reason
Questionnaire	yes no	
Observation	yes no	
Interview	yes no	
Document Review	yes no	
Test	yes no	

Student Achievement

Question:____

____

Tool	Appropriate?	Reason
Questionnaire	yes no	
Observation	yes no	
Interview	yes no	
Document Review	yes no	
Test	yes no	

Sample form 5 - 1 School_______________

Selecting the Tools

List each question that you have and then describe the tools and processes you will use to gather the information.

Goals and Objectives

Question	Tool/Process
1.	
2.	
3.	

Staff Development

Question	Tool/Process
1.	
2.	
3.	

(continued next page)

Sample form 5 - 1(cont.)

Selecting the Tools

Instructional Materials:

Question	Tool/Process
Hardware	
1.	
2.	
Software	
1.	
2.	
Print Materials	
1.	
2.	

Student Achievement

Question	Tool/Process
1.	
2.	
3.	

Sample form 5 - 2 School________________

Organizing the Tools

Select several tools within each component where you have a question or set of questions to see the structure of your evaluation.

Tools **Components**	Questionnaire	Observation	Interview	Document Review	Test
Goals and Objectives					
Staff Development					
Instructional Materials					
Student Achievement					

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Section 6

DESIGNING AND USING THE TOOLS

Once you have decided what questions you are going to try to answer and what types of tools would be most useful, you are ready to purchase, create or revise the tools that you need. Since few, if any, commercial tools are available for your use, you will be designing most of the tools that you need in your evaluation.

This section shows some sample tools that can be used to gather information. These tools are developed to respond to the questions that fall into the four major components of the computer education program:

goals and objectives
staff development
instructional materials
student achievement

The tools that are shown are ones that you can use with or without revision. Again, you may choose to design or customize some tools for additional components or for only one or more of the components, such as the goals and objectives. Each topic shows a sample use of each tool. The full size forms are at the end of the section and can be changed or reproduced to meet your needs.

Section 6 also discusses the process of actually collecting the information. To exemplify this process, the sample forms are shown for Pleasant Valley Middle School.

Finding vs. creating the tools

You will for the most part need to create your own tools to answer the questions in your evaluation. Evaluation processes or tools such as this Handbook are being developed as the computer education field itself is developing. Whatever tools you decide to use, you should always keep them flexible enough so that they will still be usable after your goals have changed or your questions have changed.

There are a few examples of available tools. One of the most directly applicable would be end-of-chapter tests or pre-post tests from commercial publishers of print materials for the computer literacy courses in the schools. There are also many forms that districts have developed for their inservice-training programs or for selecting textbooks and other print materials. There are also many forms for evaluating and selecting computer hardware and computer software.

The first thing you should do is find out if the materials that you need actually exist in the school system. Has your school adopted any major publisher's computer books with accompanying tests or other evaluation materials? If these books were chosen to meet your course objectives, the accompanying tests may be suitable for your evaluation needs. Some publishers are offering computerized "Test Generators" which have a large number of items from which you can select appropriate questions.

There are also a few computer "competency" tests recently or being developed. These tests, however, are designed to do an assessment of a student's general knowledge of computing. These tests are not designed to test your program goals and objectives. An assessment of your computer education program that includes test data, should use test data that correlates to your goals and objectives.

At this point you have formulated the questions with participation from people in the school. The rest of Section 5 will give you the chance to focus further on the questions for the four major components of the computer education program: program goals and objectives, staff development, instructional materials, and student achievement.

Evaluating the program goals and objectives

A formative evaluation assumes that the program goals and objectives are still in the development stage but have been stated in some form. While your objectives may be outdated or incomplete, they are probably well-written and specific enough to serve as a basis for program evaluation.

Find the most recent version of your program goals, objectives or learning outcomes. Whether they are indeed too general, outdated, or incomplete, they can be reviewed to see:

1. if they were indeed implemented
2. how well they were implemented
3. how they should be revised

You can also review the appropriateness of each of your objectives given the staff development that has or has not occurred, the student's access to the instructional materials and the student success in attaining each course objective.

Given the list of goals and objectives, you could discover whether or not the goals and objectives were actually implemented and, if so, how, where and when and, if not, why not. You may also find that other goals and objectives were implemented instead and will want to list them for discussion when you do your recommendations.

To measure the actual implementation of the program goals and objectives, you or your staff could fill out Sample Form 6-1 (found at the end of Section 6). Since you will have more than 8 objectives, you should reproduce the form and change the numbers for the total number of your objectives. If others are going to work on the form with you, you should have the goals and objectives typed in for them.

First, your goals or objectives (or both if you wish) should be listed on the left column of the form. The person using the form then comments in the middle and right hand columns as shown in the following example.

Sample form 6-1

PROGRAM IMPLEMENTATION DESCRIPTION
FOR
GOALS AND OBJECTIVES

SCHOOL: Pleasant Valley Middle School   District: Independent School #280

Goal or Objective	Implementation Planned	Actual Implementation
1. To be able to operate a computer	Hands-on time in the computer lab	Every student was scheduled for and received two 40-min periods per week for 18 weeks
2. To be able to use word-processing software to create and edit a document	Access to hardware and word-processing software in computer literacy class	Students in computer literacy class were given instruction and access to hardware and software for 4 40-min periods.
.		
.		
.		

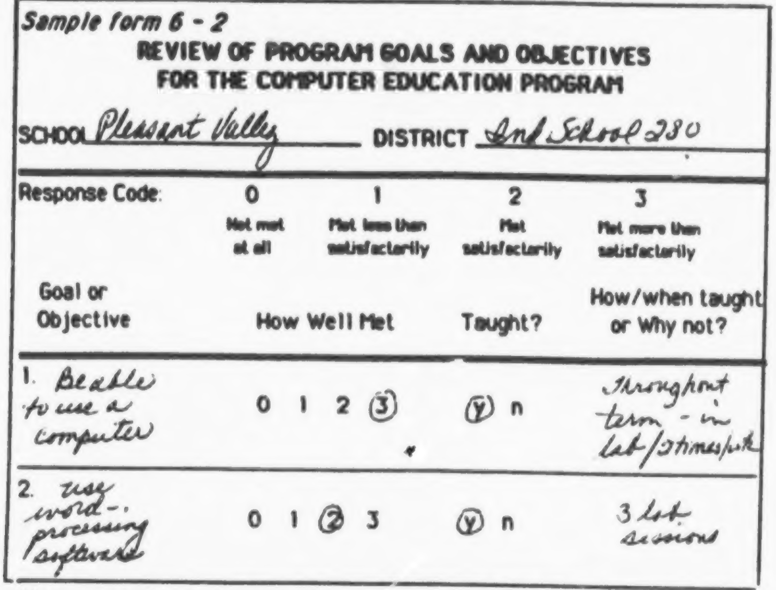
To respond to another commonly asked question:

> " How well did we meet each of our objectives?"

you could use Sample form 6-2 at the end of Section 6. This sample form shows a structure which you can revise as needed. Your own situation will determine whether one or more persons should fill out the form in order to get the information you that you need. As in Sample form 6 -1, the goals and objectives should be put on the form first if it is given to other people to complete.

Teachers who are responsible for helping meet the program objectives can probably give a rating to each objective, based on their teaching experiences with each objective. The purpose of this form is to give you an overview of your program, not to give you "proof" of its "succeses".

The form is shown here with some sample information from Pleasant Valley's Computer Education Program, to give you an idea of how it could be filled out.



Sample form 6 - 2

REVIEW OF PROGRAM GOALS AND OBJECTIVES FOR THE COMPUTER EDUCATION PROGRAM

SCHOOL Pleasant Valley DISTRICT Ind School 280

Response Code: 0 Not met at all; 1 Met less than satisfactorily; 2 Met satisfactorily; 3 Met more than satisfactorily

Goal or Objective	How Well Met	Taught?	How/when taught or Why not?
1. Be able to use a computer	0 1 2 [✓ 3]	[✓ y] n	Throughout term - in lab/3 times/wk
2. use word-processing software	0 1 [✓ 2] 3	[✓ y] n	3 lab sessions

There are other questions you may want to ask about your computer education program's objectives. You could revise Sample form 6-2 to see what responses could be noted for these types of questions:

1. Does the objective fit into the affective, cognitive, or psychomotor domain?
2. What type or level of skill does it reflect:
   one that is introduced, practiced, reviewed, or extended?
3. How much time did the teacher and student have for activities that related to each objective?
4. What kind of access to hardware, software or print materials did the teacher and student have for each objective?
5. Should the objective be revised or deleted, or should others be added to make the program current with the technology?

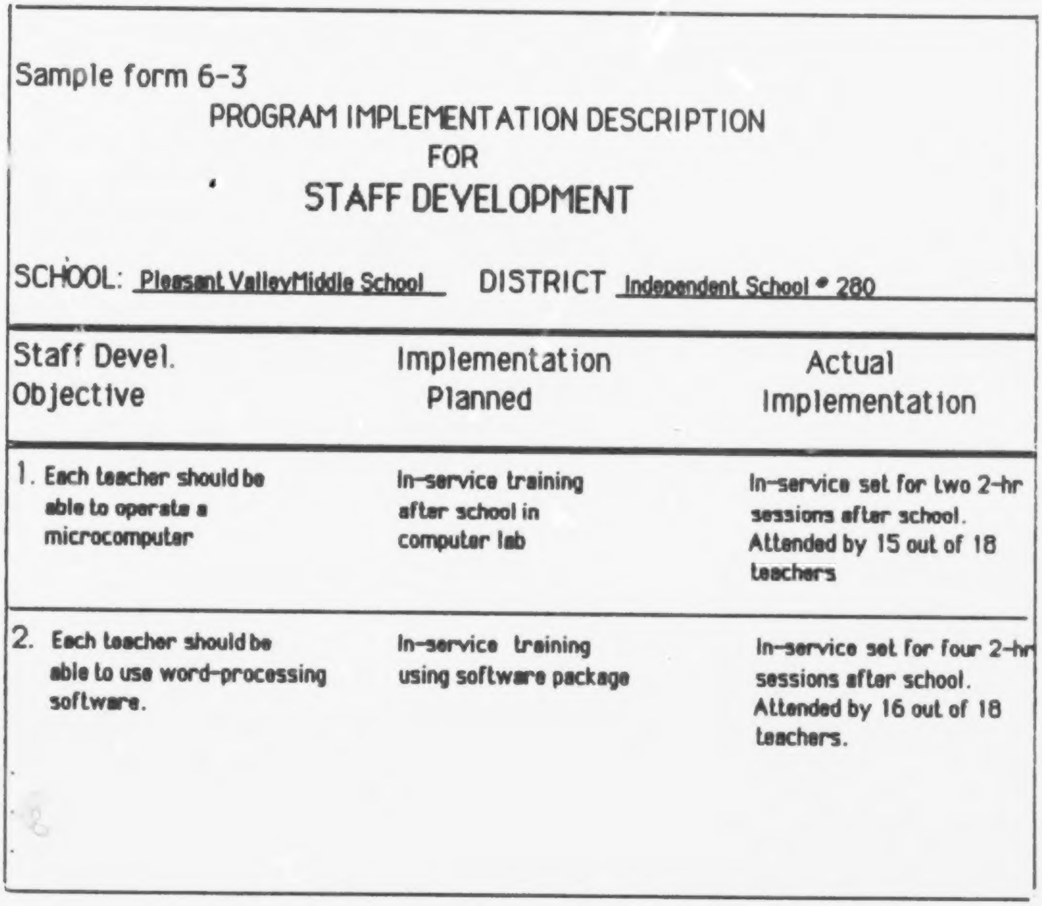
If you want to review other program components, you should continue on with the next page. If you are only reviewing your goals and objectives, you should proceed to work on the sample forms.

Evaluating the staff development

The evaluation of the staff development component helps determine the amount and kind of preparation the teachers currently have as well as the amount and kind of preparation the teachers think they need.

If there is an existing plan for the computer education program, review it to see if it includes a section on staff development. If there was a plan for training, one of the first things you can do is to verify that it took place.

To measure the actual implementation of the staff development process, fill out Sample Form 6-3 found at the end of Section 6.



Sample form 6-3

PROGRAM IMPLEMENTATION DESCRIPTION
FOR
STAFF DEVELOPMENT

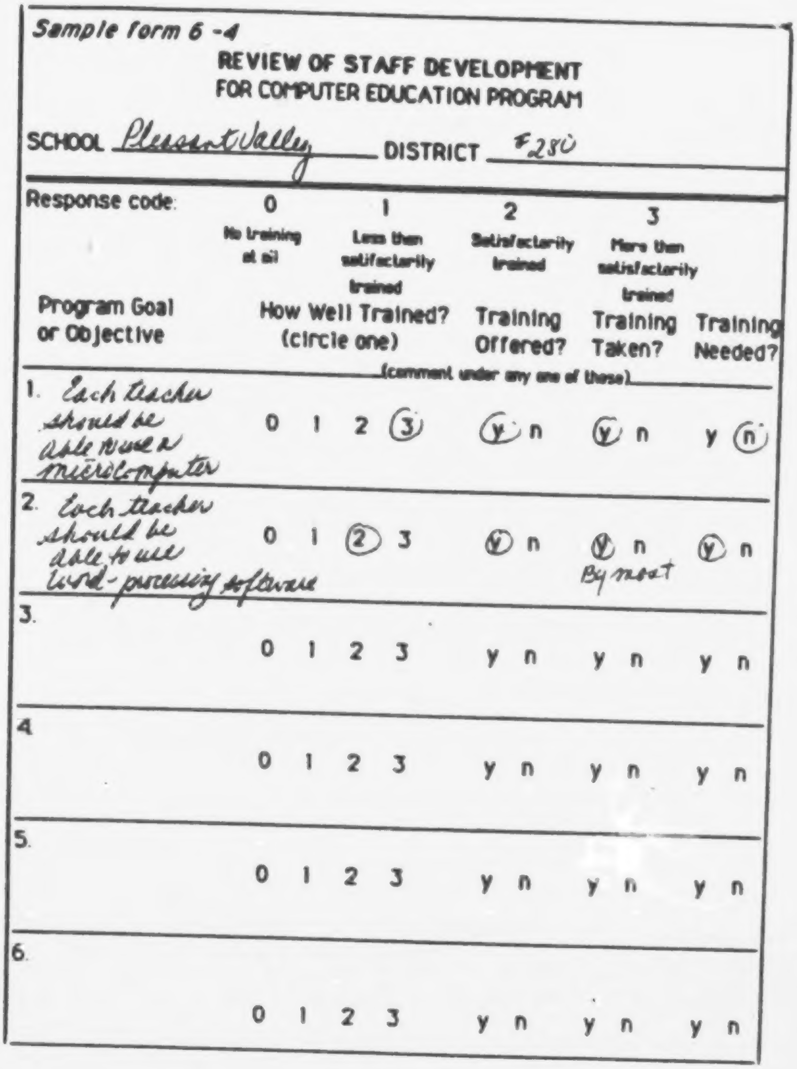
SCHOOL: Pleasant ValleyMiddle School DISTRICT Independent School • 280

Staff Devel. Objective	Implementation Planned	Actual Implementation
1. Each teacher should be able to operate a microcomputer	In-service training after school in computer lab	In-service set for two 2-hr sessions after school. Attended by 15 out of 18 teachers
2. Each teacher should be able to use word-processing software.	In-service training using software package	In-service set for four 2-hr sessions after school. Attended by 16 out of 18 teachers.

You may want information from the teachers regarding the courses they are teaching, the program objectives they are trying to teach, and the degree to which their training is sufficient for the task. The questionnaire below helps you respond to the question:

"How well trained is the staff for the computer education program?"

A complete sample form (6-4) is found at the end of the section which you can revise as needed. Here is a portion of it filled out with the program at Pleasant Valley.



Sample form 6-4

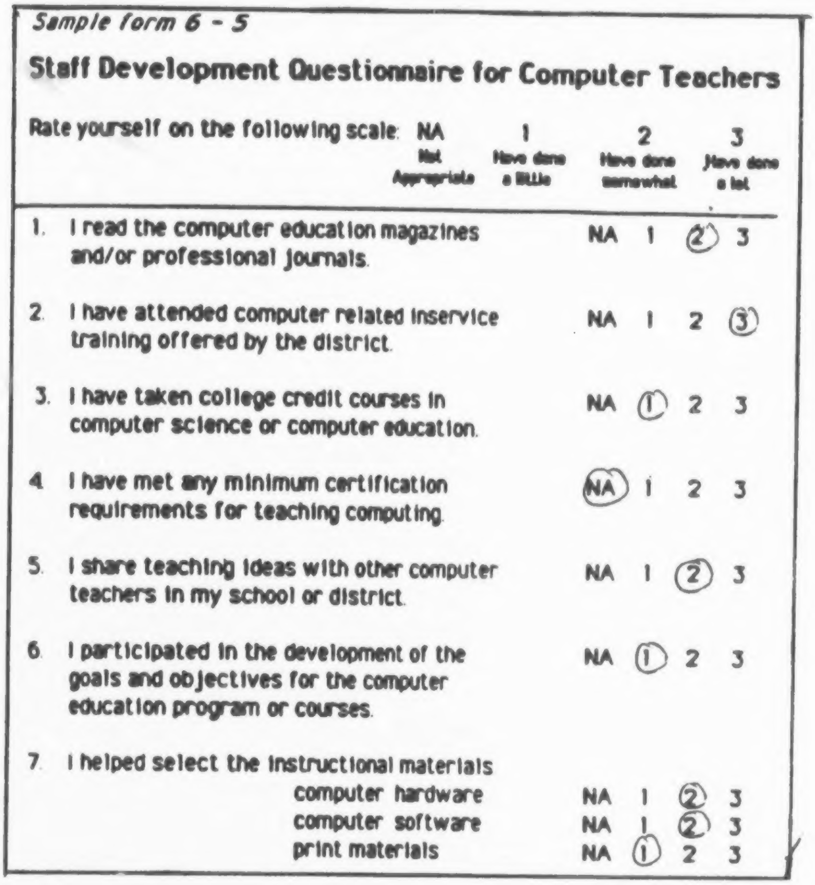
REVIEW OF STAFF DEVELOPMENT
FOR COMPUTER EDUCATION PROGRAM

SCHOOL Pleasant Valley DISTRICT #280

Response code: 0 No training at all; 1 Less than satisfactorily trained; 2 Satisfactorily trained; 3 More than satisfactorily trained

Program Goal or Objective	How Well Trained? (circle one)	Training Offered?	Training Taken?	Training Needed?
	(comment under any one of these)			
1. Each teacher should be able to use a microcomputer	0 1 2 [✓ 3]	[✓ y] n	[✓ y] n	y [✓ n]
2. Each teacher should be able to use word-processing software	0 1 [✓ 2] 3	[✓ y] n	[✓ y] n By most	[✓ y] n
3.	0 1 2 3	y n	y n	y n
4.	0 1 2 3	y n	y n	y n
5.	0 1 2 3	y n	y n	y n
6.	0 1 2 3	y n	y n	y n

While the previous sample form was designed to give you a perspective on the training needed by the staff to be able to teach the program objectives, you may want additional information from yourself or from the computing teachers. If so, you can use Sample Form 6-5, shown here partially, with some information from Pleasant Valley.



Sample form 6 - 5

Staff Development Questionnaire for Computer Teachers

Rate yourself on the following scale:	NA	1	2	3
	Not Appropriate	Have done a little	Have done somewhat	Have done a lot

1. I read the computer education magazines and/or professional journals.	NA	1	[✓ 2]	3
2. I have attended computer related inservice training offered by the district.	NA	1	2	[✓ 3]
3. I have taken college credit courses in computer science or computer education.	NA	[✓ 1]	2	3
4. I have met any minimum certification requirements for teaching computing.	[✓ NA]	1	2	3
5. I share teaching ideas with other computer teachers in my school or district.	NA	1	[✓ 2]	3
6. I participated in the development of the goals and objectives for the computer education program or courses.	NA	[✓ 1]	2	3
7. I helped select the instructional materials				
computer hardware	NA	1	[✓ 2]	3
computer software	NA	1	[✓ 2]	3
print materials	NA	[✓ 1]	2	3

As you can see, it is designed to help you get a sense of the level of professional commitment on the part of the computer education program staff. It is also designed so that the responses can be easily summarized for any recommendations and a report if you are writing one.

Evaluating the Instructional Materials

In evaluating the instructional materials for the computer education program, you will want to know if the materials are being used and how satisfactory the materials are. What you look at specifically depends on the goals of the program and the stage that the school is at in acquiring and using these materials.

The first thing you may want to do is to document the implementation of the materials and establish that the materials are in use by the teachers and students. Again, you can review the program plan to see if there was a plan for selecting and acquiring the instructional materials, such as hardware, software, and print (non-print) materials. If there is nothing written, ask the appropriate people in the school district to state what the plan was as they remember it.

Use Sample Form 6-6 to help you describe the actual selection and use of the instructional materials. Here is one example in each area.

6-6

PROGRAM IMPLEMENTATION DESCRIPTION
FOR
INSTRUCTIONAL MATERIALS

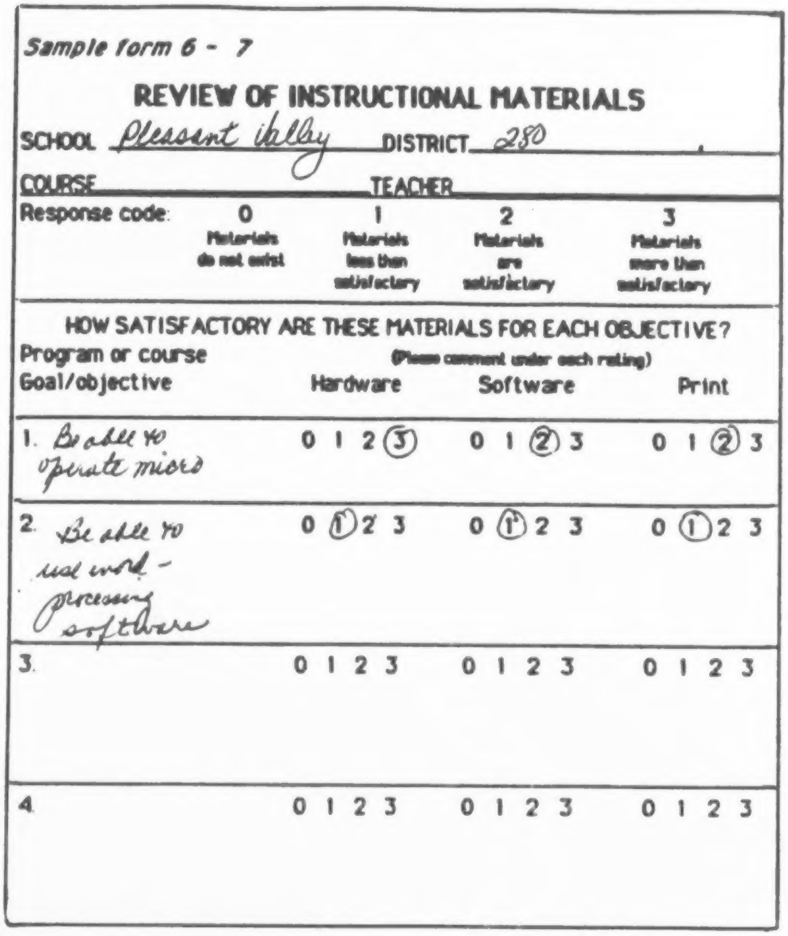
SCHOOL: Pleasant Valley Middle School DISTRICT Independent Schools # 280

Instr. Materials Goal	Implementation Planned	Actual Implementation
HARDWARE		
1. 8-10 microcomputers in a lab per school	Purchase after bids from computer companies	10 Apple IIe's installed in each school at end of August, used fall and spring terms
SOFTWARE		
1. Access to word-processing software in each computer lab	Purchase/license software so each computer equipped with word-processing	10 packages of School-Writer purchased at quantity discount & used fall and spring terms
PRINT MATERIALS		
1. Student activitiy books available for word-processing activities	Purchase classroom sets of activity books, after reviewing available materials	Five classroom sets of books: Learning about Word-Processing purchased & used 3 weeks each

One of the questions you probably want to respond to is this one:

" How satisfactory are the instructional materials that we are using?"

The only way that students will have the full oppportunity to reach the program goals and objectives, is to have adequate access to the appropriate instructional materials. To find out if your materials are indeed appropriate, you can use Sample form 6-7 or some revision of it. The goals and objectives again form the basis of the evaluation and should be written in first. Then those materials that you consider instructional can be noted opposite each objective. Note that if you do not consider hardare to be "instructional" you can simply remove that column from the form when you prepare it.



Sample form 6 - 7

REVIEW OF INSTRUCTIONAL MATERIALS

SCHOOL Pleasant Valley DISTRICT 280

COURSE TEACHER

Response code:	0	1	2	3
	Materials do not exist	Materials less than satisfactory	Materials are satisfactory	Materials more than satisfactory

HOW SATISFACTORY ARE THESE MATERIALS FOR EACH OBJECTIVE?

Program or course Goal/objective	Hardware	Software	Print
	(Please comment under each rating)		
1. Be able to operate micro	0 1 2 [✓ 3]	0 1 [✓ 2] 3	0 1 [✓ 2] 3
2. Be able to use word-processing software	0 [✓ 1] 2 3	0 [✓ 1] 2 3	0 [✓ 1] 2 3
3.	0 1 2 3	0 1 2 3	0 1 2 3
4.	0 1 2 3	0 1 2 3	0 1 2 3

Each of the different types of instructional materials could also be evaluated separately if you wish. Since there are so many forms available for selecting hardware, software and textbooks, the Handbook does not include these specific forms. They are some, however, referenced for your information, in the "Further References" at the end of this section.

Review of Hardware

Assume for the purpose of an example, that one of the questions that the school is asking is "We need to increase student access to the computer hardware in our school. We will need to purchase additional microcomputer stations for use next year. Do we buy more of the microcomputer models we now have or should we try a different computer manufacturer or purchase a newer model of the brand that we have?"

That question could be answered by first reviewing the responses to the previous sample form (6-7) and then doing a more in-depth review of the objectives, resources and plans for the next few years. Some of the factors that you want to consider about hardware selection are these:

1. Software availability
2. Programming languages
3. Peripherals available
4. Cost of system
5. Maintenance
6. Ease of use
7. Networking capability or
   other expansion ability
8. Color, graphics, and sound features

The future purchasing decisions are also discussed again in Section 8 - Making the Recommendations.

Review of Software

You may also want to review the software that is being used and find out the level of use and what the additional needs are regarding software. Decide first whether or not you want to have students help with this part of the evaluation. If so, design a student version of a software review form that is appropriate for the age or grade level of your students. Again, some well-known evaluation forms from organizations or educational agencies are referenced at the end of this section. The most important aspect, which may or may not be on those forms, is that of the support it gives to your curriculum in your school.

Specific software evaluation ratings, together with Sample form 6-7 (shown previously) would give you a good picture of the software use in your school.

Review of Print Materials

A more comprehensive review of your instructional print materials may be needed if you are purchasing additional or new materials. If you already have some print materials, you may be trying to decide whether you should get more of them.

As with the hardware and software components, the print materials should be selected and evaluated on how well they support your program or your course goals and objectives. Use the course goals and objectives as the basis for looking at your needs regarding print materials. Note also that while the Handbook uses the term "print materials" in general, that it includes audio-visual or other support materials as well.

If your school is considering the purchase of a text for the course, a full evaluation should be made of all of the texts being considered for use. Many schools have their own guidelines for evaluating textbooks. If you need to develop such a form for the school, be sure to include the following factors:

STUDENT TEXT

1. Correlation to the course objectives
2. Level of readability
3. Sufficient number of exercises and projects for students
4. Range of activities for different levels of students
5. Sequence and organization of information
6. Level of depth of information
7. Use of diagrams, photos, and drawings

(criteria for evaluation of student text) continued

8. Format for ease of use
9. Glossary appropriate for grade level
10. Index with appropriate terms
11. Compatibility with available hardware and software
12. Information up to date

TEACHER'S SUPPORT MATERIALS

1. Suggested lesson plans and timelines
2. Additional exercises and projects for students (off and on computer)
3. End-of-chapter tests for students
4. Additional lab work for students (on computer)
5. Background content material for teacher
6. Reproducible products, such as diagrams, flow charts, sample programs, grid sheets (graphics and text screens) for use as overhead transparencies and student worksheets
7. Updated information about the technology
8. Software support

Evaluating student achievement

Student achievement is the "bottom line" for any new educational program. If students are learning something "worthwhile" or what they are "supposed to be", the program is considered a success. If a proponent of an educational program can't show that students are learning something substantial, it will difficult to continue the funding or support.

Given the program or course goals and objectives, the students should be evaluated on their attainment of those goals and objectives. The difference between program goals and objectives was discussed in Section 2. This same difference exists with your course goals and objectives. Your course goals should be general statements and your course objectives should be stated in more concrete terms.

Here are some examples from the computer literacy course for seventh graders at Pleasant Valley Middle School:

Course Goals	Course Objectives
To bo able to operate a computer	To know how to use the Apple computer's keyboard
	To be able to load and use commercial software
To write a simple computer program in BASIC	To be able to use the PRINT, LET and END statements in writing a short BASIC program
	To be able to use the FOR-NEXT looping structures in writing a short BASIC program

Your course goals and objectives should be as specific as possible so that they can be measured. If you really want to have very specific questions about the goals and objectives, you could re-write them in even more behavioristic terms -- the behavior students will demonstrate after they have achieved the objective. For example:

Course Objective:	Behavioral objective:
To be able to use FOR-NEXT looping structures in writing a short BASIC program	Given a short BASIC program, the student can tellif the FOR-NEXT statements willbe executed properly and can recode the statements to correct errors.

You then re-phrase each goal or objectve and make it a question:

Questions re: Course Goals	Questions re: Course Objectives
Are students able to operate a computer?	Are students able to use the Apple computer's keyboard?
Are students able to write a simple computer program in BASIC?	Can students use the FOR-NEXT statements correctly in writing a simple BASIC program?
	Questions re: Behavioral objectives
	Given a simple BASIC program, can the student 1.) tellif the FOR-NEXT statement willexecute properly 2.) recode the statements to correct any errors?

Having the objectives written on a very specific level not only help focus the questions but will help you design and write the actual test items or other evaluation questions for the students.

One of the first questions to come up in the student achievement component is whether or not the students had the opportunity to try to attain the given goals or objectives for the computer course or unit that they took. As with the other components of the computer education program, you will want to verify that these opportunities did or did no occur.

You can use Sample Form 6-8 to get a description of the program implementation for student achievement. Again, the form is developed by first listing each student learning outcome and then create the opportunity for verification. It would look something like this form that the Pleasant Valley staff has started to fill out:

6 - 8

PROGRAM IMPLEMENTATION DESCRIPTION
FOR
STUDENT ACHIEVEMENT

SCHOOL: Pleasant Valley COURSE: Computer Literacy

Student Learning Outcomes	Activities planned For Reaching Outcomes	Evidence of Achievement
1. Proficiency using one word-processing package	Attend three class discussions on topic & use wp software in lab for three days	Complete two word-processing projects & meet 70% criteria on 20-item test
2. Proficiency using one data-base management program	Attend four class discussions on topic and use dbms software in lab for four days	Complete two dbms projects & meet 70% criteria on 20-item test

You may also want to evaluate each of the course goals and objectives in the following way:

1. Can behavioral objectives be written from each one which are suitable for formulating test questions for students?

2. Does it correlate to an item on any standardized tests being given to students in the program?

3. Is it an objective that is "testable" or "observable"? If not, should the objective be re-written or omitted for a student evaluation?

If you find that the student objectives are written in such a way that they can tested or verified in some observable way, then it is easy enough to construct test items or observation forms to see if students meet the established criteria. If test items are going to be used to check the achievement of a specific objective, four or five items should be used to substantiate that it has been achieved.

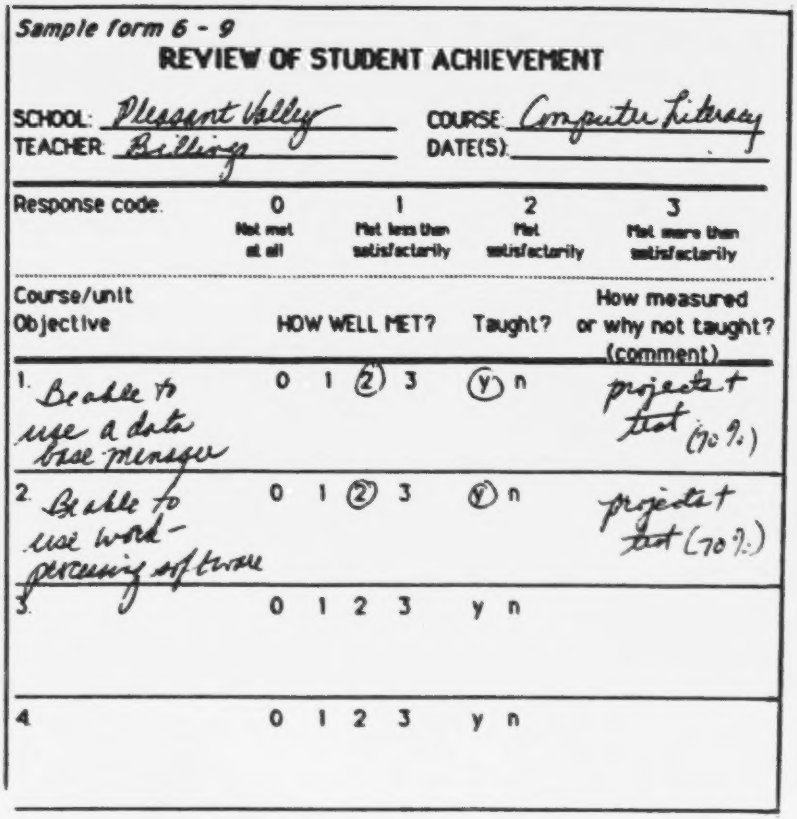
If you want to use methods other than testing to verify student achievement, you can use student projects. The "criteria" for meeting an objective related to word-processing, for example, could be successful completion of a project that includes: entering, revising and printing out a 2- page document, using the word-processing software in the computer lab. Other objectives can be met by students who complete programming projects. Programming projects can be devised that, if the student completes the project, would show that the student has understood or can apply a given programming concept.

To be able to respond to a question such as

"How well did the students do in the course?"
or
"How satisfactorily did they acquire the desired learning outcomes?",

You could use Sample form 6-9 at the end of Section 6. This sample form provides a structure much like the one used in the previous components and can be revised as needed. Again, the first thing you should do is fill in the course objectives or learning outcomes in the first column. The teacher of the course or unit can fill in the remaining columns. A form from Pleasant Valley is shown on the following page for your information.

Sample form for review of student achievement:



Sample form 6 - 9

REVIEW OF STUDENT ACHIEVEMENT

SCHOOL: Pleasant Valley
COURSE: Computer Literacy
TEACHER: Billings
DATE(S):

Response code:	0	1	2	3
	Not met at all	Met less than satisfactorily	Met satisfactorily	Met more than satisfactorily

Course/unit Objective	HOW WELL MET?	Taught?	How measured or why not taught? (comment)
1. Be able to use a data base manager	0 1 [✓ 2] 3	[✓ y] n	project + test (70%)
2. Be able to use word-processing software	0 1 [✓ 2] 3	[✓ y] n	project + test (70%)
3.	0 1 2 3	y n	
4.	0 1 2 3	y n	

Since many people are interested in what students actually do when they use computers, you may want to use the observation form - Sample Form 6-10. You can use it to describe any observable behaviors in the classroom, with and without computers.

Page 6-30 lists the directions for using the sample observation form. It describes an example of tracking one behavior: "off-on task". This form is discussed further in the next section on Summarizing the Data. The appendix to the Handbook describes the process for tracking two behaviors and also shows the two-behavior sample form and an example of a used form.

Collecting the information

Now that you have had the opportunity to design the tools you will use, it it time to actually collect the information that you want. The first thing you will need to do is schedule the use of those tools.

There are of course, some limitations in the data collecting process. There are the schedule concerns: teachers can't be interviewed while they are conducting class or pre-tests and post-tests must be administered during the first and last weeks of a course. Do you need to ensure confidentiality of the responses from the people? Do you need parent permission to administer questionnaires or tests to the students? Where are all of the documents that you might like to review (lesson plans, test results, computer lab sign-up sheets) and whose permission do you need to look at them? You might want to list all of the organizational limitations, that you can think of before you set the schedule.

Getting a schedule

Develop a data collection schedule such as *Checkpoint 6-1* at the end of this section. Specify, in sequential time frames, the tool or process you will use, to whom it will be given, how and where it will be given, and who will actually collect the information. The following is the start of a sample schedule:

DATA COLLECTION SCHEDULE
COMPUTER EDUCATION PROGRAM

SCHOOL Pleasant Valley

TIME PERIOD	TOOL/PROCESS	GIVEN TO	WHERE	BY WHOM
May 10-18	Questionnaire	teachers.		Billings
May 23-26	Document Review.	at computer lab sign-up sheet		"

Establishing a procedure

Procedures must be established for collecting the information and agreed to by all of the participants. A specific tool should be used in the same way so that the responses can be summed, averaged or compared. For example, two people who are using an observation form may record the same incident in a classroom in very different ways. Likewise, two people who are interviewing subjects may do so in very different styles and may gather very different responses to a question.

If people are going to help you gather data, you must offer them very clear instructions and perhaps some training. The more that you can write out for them, the better.

Your next task

Decide which of the sample forms at the end of this section would be useful to you. Revise any of them as needed and duplicate as many as you need to take care of the number of objectives or learning outcomes that your school has. Decide how and when you are going to use them -- and then go use them!!

The next section describes some methods for summarizing the information. The two sections that follow that will help you make your recommendations and write a report.

Sample form 6 - 1

PROGRAM IMPLEMENTATION DESCRIPTION
FOR
GOALS AND OBJECTIVES

SCHOOL:____________________ DISTRICT:____________________

Goal or Objective	Implementation Planned	Actual Implementation
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Sample form 6 - 2

REVIEW OF PROGRAM GOALS AND OBJECTIVES FOR THE COMPUTER EDUCATION PROGRAM

SCHOOL____________________ DISTRICT ____________________

Response Code:	0	1	2	3
	Not met at all	Met less than satisfactorily	Met satisfactorily	Met more than satisfactorily

Goal or Objective	How Well Met	Taught?	How/when taught or Why not?
1.	0 1 2 3	y n	
2.	0 1 2 3	y n	
3.	0 1 2 3	y n	
4.	0 1 2 3	y n	
5.	0 1 2 3	y n	
6.	0 1 2 3	y n	
7.	0 1 2 3	y n	

Sample form 6 - 3

PROGRAM IMPLEMENTATION DESCRIPTION
FOR
STAFF DEVELOPMENT

SCHOOL: ____________________ District ____________________

Staff Devel. Objective	Implementation Planned	Actual Implementation
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

STAFF FORM 1

Sample form 6 -4

REVIEW OF STAFF DEVELOPMENT
FOR COMPUTER EDUCATION PROGRAM

SCHOOL ____________________ DISTRICT ____________________

Response code:	0	1	2	3
	No training at all	Less than satifactorily trained	Satisfactorily trained	More than satisfactorily trained

Program Goal or Objective	How Well Trained? (circle one)	Training Offered?	Training Taken?	Training Needed?
1.	0 1 2 3	y n	y n	y n
2.	0 1 2 3	y n	y n	y n
3.	0 1 2 3	y n	y n	y n
4.	0 1 2 3	y n	y n	y n
5.	0 1 2 3	y n	y n	y n
6.	0 1 2 3	y n	y n	y n
7.	0 1 2 3	y n	y n	y n

(comment under any one of these)

Sample form 6 - 5

Staff Development Questionnaire for Computer Teachers

Rate yourself on the following scale:	NA	1	2	3
	Not Appropriate	Have done a little	Have done somewhat	Have done a lot

1.	I read the computer education magazines and/or professional journals.	NA	1	2	3
2.	I have attended computer related inservice training offered by the district.	NA	1	2	3
3.	I have taken college credit courses in computer science or computer education.	NA	1	2	3
4.	I have met any minimum certification requirements for teaching computing.	NA	1	2	3
5.	I share teaching ideas with other computer teachers in my school or district.	NA	1	2	3
6.	I participated in the development of the goals and objectives for the computer education program or courses.	NA	1	2	3
7.	I helped select the instructional materials:				
	computer hardware	NA	1	2	3
	computer software	NA	1	2	3
	print materials	NA	1	2	3
8.	I have organized computer courses so that students have the opportunity to meet the course goals and objectives.	NA	1	2	3
9.	I am active in local, state or national computer education associations or or user groups.	NA	1	2	3
10.	I have served on local, regional or state committees that help advance computer education programs in the schools.	NA	1	2	3

Sample form 6 - 6

PROGRAM IMPLEMENTATION DESCRIPTION FOR
INSTRUCTIONAL MATERIALS

SCHOOL: ____________________ District____________________

Instr. Materials Goal	Implemenation Planned	Actual Implementation
HARDWARE		
1.		
2.		
SOFTWARE		
3.		
4.		
PRINT MATERIALS (& non-print)		
5.		
6.		
7.		

Sample form 6 - 7

REVIEW OF INSTRUCTIONAL MATERIALS

SCHOOL ______________________ DISTRICT ______________________

COURSE ______________________ TEACHER ______________________

Response code:	0	1	2	3
	Materials do not exist	**Materials less than satisfactory**	**Materials are satisfactory**	**Materials more than satisfactory**

HOW SATISFACTORY ARE THESE MATERIALS FOR EACH OBJECTIVE?

Program or course Goal/objective	Hardware	Software	Print
	(Please comment under each rating)		
1.	0 1 2 3	0 1 2 3	0 1 2 3
2.	0 1 2 3	0 1 2 3	0 1 2 3
3.	0 1 2 3	0 1 2 3	0 1 2 3
4.	0 1 2 3	0 1 2 3	0 1 2 3
5.	0 1 2 3	0 1 2 3	0 1 2 3
6.	0 1 2 3	0 1 2 3	0 1 2 3

Sample form 6 - 8

PROGRAM IMPLEMENTATION DESCRIPTION FOR

STUDENT ACHIEVEMENT

SCHOOL: ____________________ COURSE: ____________________

Student Learning Outcomes	Activities Planned For Reaching Outcomes	Evidence of Achievement
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Sample form 6 - 9

REVIEW OF STUDENT ACHIEVEMENT

SCHOOL: ____________________ COURSE: ____________________

TEACHER: ____________________ DATE(S): ____________________

Response code:	0	1	2	3
	Not met at all	Met less than satisfactorily	Met satisfactorily	Met more than satisfactorily

Course/unit Objective	HOW WELL MET?	Taught?	How measured or why not taught? (comment)
1.	0 1 2 3	y n	
2.	0 1 2 3	y n	
3.	0 1 2 3	y n	
4.	0 1 2 3	y n	
5.	0 1 2 3	y n	
6.	0 1 2 3	y n	
7.	0 1 2 3	y n	
8.	0 1 2 3	y n	

6-10

STUDENT OBSERVATION FORM

Date__________ Observer__________________

Student	Times (Mins)						
1.______	○	○	○	○	○	○	○
2.______	○	○	○	○	○	○	○
3.______	○	○	○	○	○	○	○
4.______	○	○	○	○	○	○	○
5.______	○	○	○	○	○	○	○
6.______	○	○	○	○	○	○	○

Student Behavior observed: ____________________

code

Behavior Shown:	no ○	yes ●	Observing or near computer= 𝅗𝅥 or ♩ Using the computer= ♪ or ♪

Example: Behavior shown and at computer = ♪

Behavior not shown and not at computer = 𝅗𝅥

Teacher name______________ Classroom __________

Sketch of room, students :

6-29

Instructions for using the student observation form 6 - 10

(one behavior to be tracked - for two behaviors, see appendix)

1. Select one student behavior that you want to track during a class period. Choose a behavior that is observable and whose meaning you are in agreement with colleagues. Discuss sample student behavior and practice coding it, then check your level of agreement.

   Put the behavior on the code chart on the student observation form.

2. Determine the time periods for checking the behavior of each student. Five minute intervals are suggested because of the ease of remembering the intervals.

Example:	40 minute class: 10:00 - 10:40						
Check at:	10:05	10:10	10:15	10:20	10:25	10:30	10:35

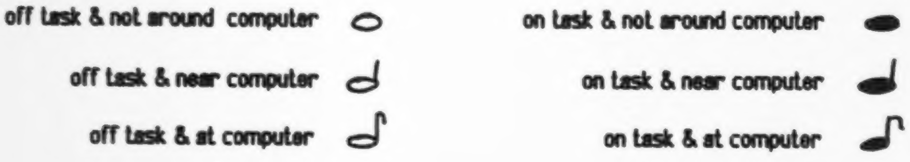
   The longer your intervals, the more students you can observe during each interval. The shorter the interval, however, the larger the total number of observations per student.

2. As class begins, pick a sample of five or six students in that class to observe. Write down an identifying characteristic about each student in the student column on the chart. Try not to select students from the same group.

3. Fill in the date, observer's name, teacher name, and classroom. A sketch could be drawn that shows the general organization of the room: the placement of the computer(s), teacher and student desks or tables.

4. Note the behavior of each of the students for each of the time periods, by shading in the oval if the behavior is shown. Then add the "stem" and "flag" marks that indicate the proximity to the computer.

   Examples:



5. Record a given classroom several times to establish any possible patterns.

Checkpoint 6-1

DATA COLLECTION SCHEDULE
COMPUTER EDUCATION PROGRAM

SCHOOL ____________________

TIME PERIOD	TOOL/PROCESS	GIVEN TO	WHERE	BY WHOM

Further References ..... for Section 6

Fink, A. and Kosecoff, J. An Evaluation Primer. Beverly Hills, CA: Sage Publications, 1978.

Jones, N.B. and Vaughan, L. (Editors) Evaluation of Educational Software: a guide to guides. Chelmsford, MA: The Northeast Regional Exhange, Inc., 1983.

Morris, L.L. and Fitzgibbon, C.T. Evaluator's Handbook. Beverly Hills, CA: Sage Pulications, 1978.

Morris, L.L. and Fitzgibbon, C.T. How to Measure Program Implementation. Beverly Hills, CA: Sage Pulications, 1978.

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NCTM. Guidelines for Evaluating Computerized Instructional Materials. Reston, VA: NCTM, 1981.

Northwest Regional Educational Laboratory. Evaluator's Guide for Microcomputer-based Instructional Packages. Eugene, OR: International Council for Computers in Education, 1982

Suydam, M.N. Evaluation in the Mathematics Classroom. Columbus, Ohio: ERIC Information Analysis Center for Science, Mathematics and Environmental Education, 1974

Texas Education Agency. Guide for Selecting a Computer-based Instructional System. Austin, TX: Texas Education Agency, 1982

UNIT 3

USING THE INFORMATION

Planning the Evaluation

Gathering the Information

Using the Information

7. Summarizing the data

8. Developing the recommendations

9. Reporting the results

This unit describes a process for summarizing the data that you have collected, then developing some recommendations and reporting the results. Each section continues to use examples to help describe the process. By applying these examples to your own situation, you should be able to develop a valuable response to the people interested in your computer education program. The checkpoints and sample forms in each of the sections will assist you as you use your information and particularly as you report your results.

SECTION 7

SUMMARIZING THE DATA

This section describes some methods for summarizing the information that you collect during your evaluation. To describe these methods, the Handbook uses sample data from some of the sample forms used in Section 6. Each of the four components will be discussed:

goals and objectives
staff development
instructional materials
student achievement

If you are reviewing only your goals and objectives at this time, you need to use only the first portion of Section 7: Summarizing data about goals and objectives. As in the previous steps of the evaluation, you can extend the process described in this section to components other than the four described.

Some general guidelines

The information that you collect has to be summarized so that you can discuss your results - either verbally or in a written report. Much of your information will not come in a format that can be analyzed quickly or easily, but the more you have structured the response formats in your tools, the easier your analysis can be.

In general, the responses to very open-ended questions will have to be categorized into a number of types of answers and then tallied and totaled. Responses on a numerical rating scale on a questionnaire, however, are already categorized and are thus set up to tally and total.

The type of evalulation that you have been conducting will not require that you identify trends or establish relationships among variables of a computer education program. The summative evaluation, which may come at a later date in the program, would make more use of descriptive or correlation statistics in analyzing the results of a data collection. For the most part, you will simply tally up the responses to questionnaires, interviews, observations, and tests and summarize the information found through document reviews. By doing simple tallies, you can present information in a simple and meaningful way for the audience of your report.

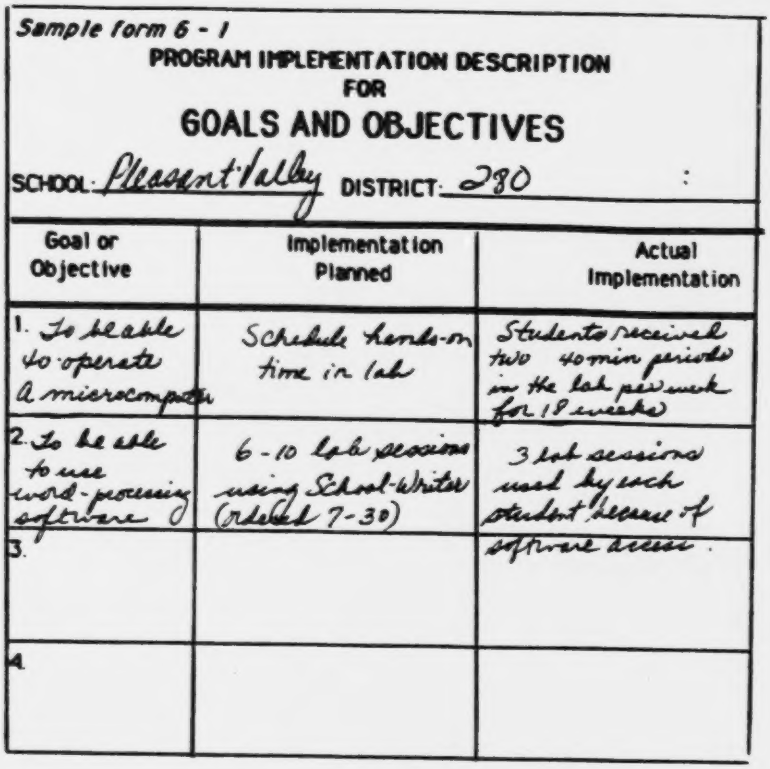
As you review the responses to the questions in the evaluation, you will find yourself summarizing the data mentally. As you review the responses even more carefully, it will become apparant how it could be summarized. There is no one right way to summarize the information you get. The most important part of the procedure is to reduce a lot of information on many pages of paper to just one or two sheets of paper.

You will probably end up with more information that you will have time to deal with. Your biggest problem in the evaluation may in fact be sorting through the large amounts of data that you will have collected and deciding what to leave out!

Summarizing data about goals and objectives

The first thing you should do if you are ready to summarize your data is to review the questions that you are trying to answer. In this case, we will use the questions and sample forms from Section 6 to exemplify the process.

If you are using the program implementation description form for goals and objectives, you can review the responses in the two right-hand columns. Compare the actual implementation to what was planned.



Sample form 6 - 1

PROGRAM IMPLEMENTATION DESCRIPTION
FOR
GOALS AND OBJECTIVES

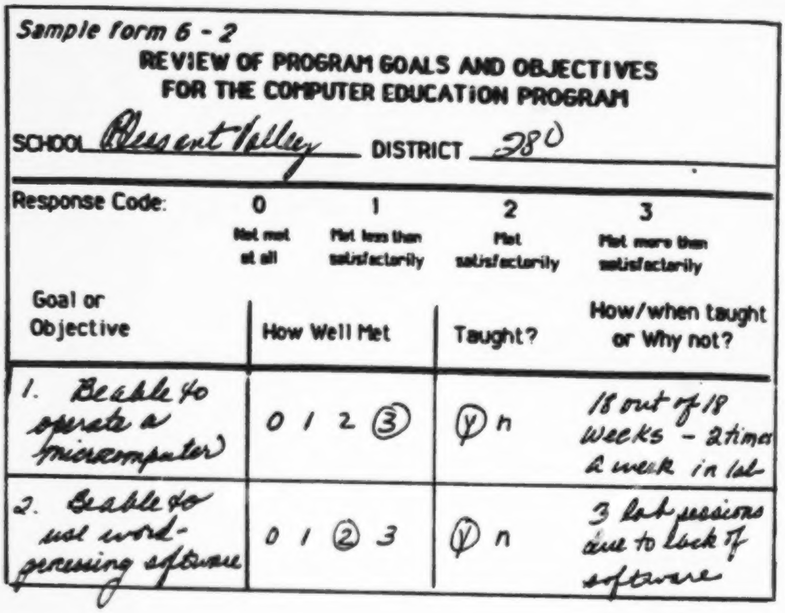
SCHOOL: Pleasant Valley DISTRICT: 280

Goal or Objective	Implementation Planned	Actual Implementation
1. To be able to operate a microcomputer	Schedule hands-on time in lab	Students received two 40 min periods in the lab per week for 18 weeks
2. To be able to use word-processing software	6-10 lab sessions using School-Writer (ordered 7-30)	3 lab sessions used by each student because of software access.
3.		
4.		

You may have to judge whether or not the actual implementation is the same as that which was planned. The most important information from this form is simply:

1. How much (what percent) of what was planned actually occurred?
2. What were the things that were successfully done?
3. What did not happen as planned?
4. What things happened that were not planned? (if the info. is stated)

To respond to another question that was asked: " How well did we meet each our objectives?" you would review Sample form 6 - 2, shown below.



Sample form 6 - 2

REVIEW OF PROGRAM GOALS AND OBJECTIVES
FOR THE COMPUTER EDUCATION PROGRAM

SCHOOL Pleasant Valley DISTRICT 280

Response Code:	0 Not met at all	1 Met less than satisfactorily	2 Met satisfactorily	3 Met more than satisfactorily

Goal or Objective	How Well Met	Taught?	How/when taught or Why not?
1. Be able to operate a microcomputer	0 1 2 [✓ 3]	[✓ y] n	18 out of 18 weeks - 2 times a week in lab
2. Be able to use word-processing software	0 1 [✓ 2] 3	[✓ y] n	3 lab sessions due to lack of software

You may first want to acknowledge the number of goals/objectives that the school is trying to teach. The rating scale makes the responses easy to tally. Simply add up the number of "0" responses, "1" responses, and so on, and state each total as a fraction. The fraction can be then converted to a percentage.

You then simply summarize the information from the rating scale by stating: "20/25 or 80% of the objectves were more than satisfactorily met in the computer literacy class. These objectives were all taught during the semester for a time period that totaled 16 out of the 18 weeks. ...

(continue with information about objectives
met satisfactorily and less than satisfactorily)

...
1 out of the 25 objectives was not met at all, but it was not taught, due to lack of time and lack of priority. This objective was ...."

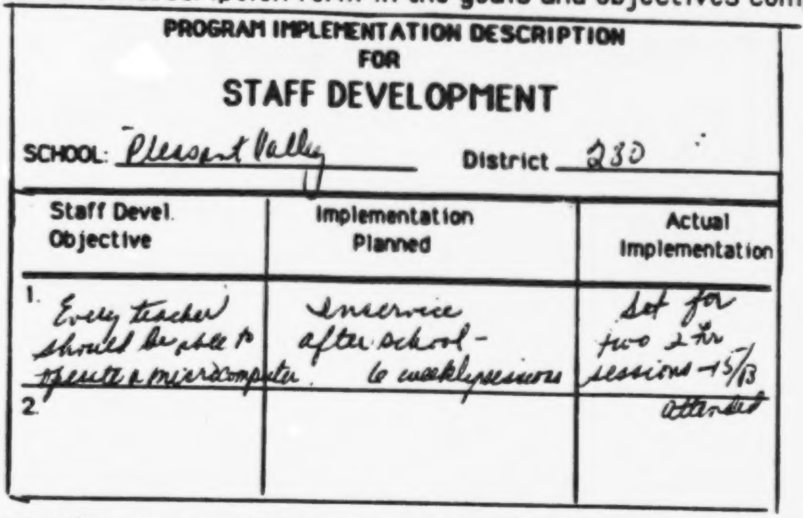
Look to see if all of the objectives that were not reached satifactorily or more than satisfactorily, all have something in common. If so, this is good information for the reader. One of the inportant uses of this form, as you will see later, is its connection to the "performance" forms in the other components.

Summarizing data about staff development

There were three forms discussed in Section 6 that you may be working with: the program implementation description, the review, and a staff questionnaire. The first two forms can be treated just like the two described in the previous topic: goals and objectives.

On the implementation description, simply figure the percent of what was planned that actually occurred. Acknowledge the things that were successfully implemented and state any patterns that you see in those implementations. State the percentage of objectives that were not implemented as planned and give any reasons that they did not occur.

On the review of staff development form, you can again tally up the number of different responses and convert each of them to percentages. You may also want to compare the level of training for each goal on this form to the success of implementation as described on the program implementation description form in the goals and objectives component.



PROGRAM IMPLEMENTATION DESCRIPTION
FOR
STAFF DEVELOPMENT

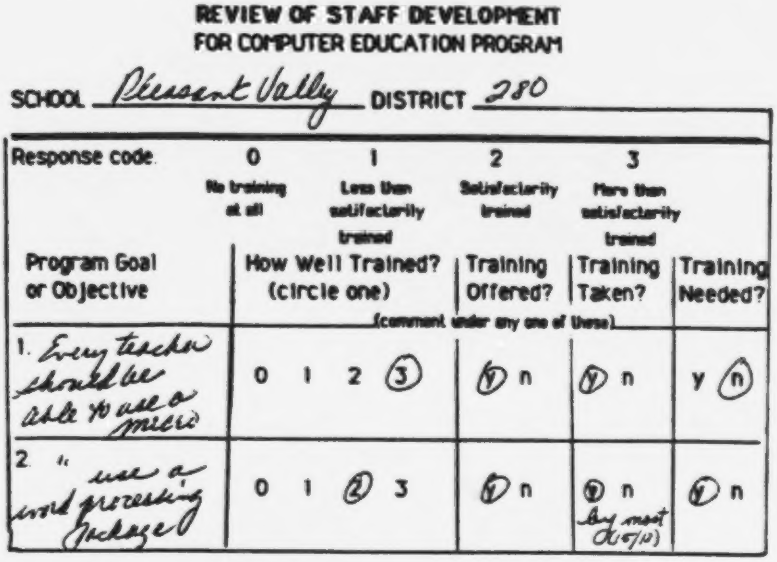
SCHOOL: Pleasant Valley District 230

Staff Devel. Objective	Implementation Planned	Actual Implementation
1. Every teacher should be able to operate a microcomputer.	Inservice after school - 6 weekly sessions	Set for two 2 hr sessions - 15/13 attended
2.		

You can also compare the number of times training was offered to the different types of ratings circled. For example: "The teachers stated that there were 3 objectives that they for which did not feel well-trained. For each of these objectives, there has been no training offered."

You can also compare the number of times training was taken to the number of times it was offered. Actually, you can compare almost any set of responses to another in the five columns of information on this form.

The staff development questionnaire can be summarized if it is given to a number of teachers in the program. Since this contains a similar rating scale for every question, a total score could be arrived at, as well as an average score for each responder. A group average could also be figured in a given school.



REVIEW OF STAFF DEVELOPMENT
FOR COMPUTER EDUCATION PROGRAM

SCHOOL Pleasant Valley DISTRICT 280

Response code: 0 No training at all; 1 Less than satisfactorily trained; 2 Satisfactorily trained; 3 More than satisfactorily trained

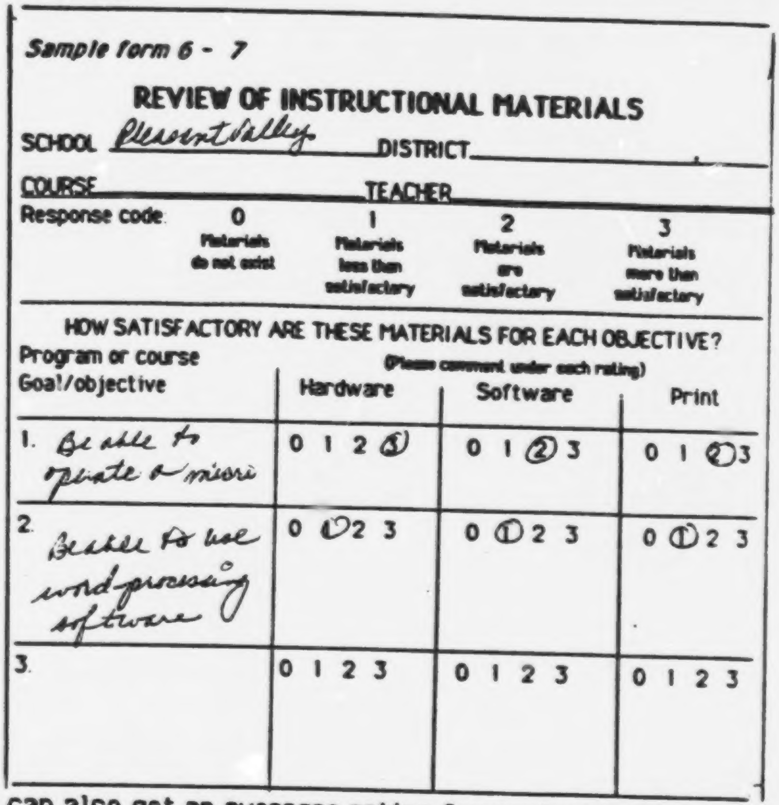
Program Goal or Objective	How Well Trained? (circle one)	Training Offered?	Training Taken?	Training Needed?
	(comment under any one of these)			
1. Every teacher should be able to use a micro	0 1 2 [✓ 3]	[✓ y] n	[✓ y] n	y [✓ n]
2. " use a word processing package	0 1 [✓ 2] 3	[✓ y] n	[✓ y] n by most (10/12)	[✓ y] n

Probably the most beneficial use of the form would be to compare a teacher's response or a school's average from semester or semester or from year-to-year. In that way, a teacher or the school would see "growth" over a period of time.

Summarizing data about instructional materials

The instructional materials forms again follow the same format as the first two components just described. Therefore on the implementation description, you can compare the number of types of implementations that were carried out as planned to those that did not happen at all or those that happened in different ways. Again, you want to first acknowledge the "successes" by summarizing or describing each of the goals that were carried out. Look to see if there is a pattern in the things that did not happen. For example, did some materials not get purchased because a budget was not approved and the money simply was not available? Those facts should be brought up when the "not-so-successful" information is shared.

The review of instructional materials is another easy form to summarize if you used the rating scales for the responders. The easiest thing to do is to get an average rating for the each of the three types of instructional materials. That will give you some sense of whether or not they are generally more pleased with the hardware, the software, or the print materials.



Sample form 6 - 7

REVIEW OF INSTRUCTIONAL MATERIALS

SCHOOL Pleasant Valley DISTRICT________

COURSE________ TEACHER________

Response code:	0	1	2	3
	Materials do not exist	Materials less than satisfactory	Materials are satisfactory	Materials more than satisfactory

HOW SATISFACTORY ARE THESE MATERIALS FOR EACH OBJECTIVE?

Program or course Goal/objective	Hardware	Software	Print
	(Please comment under each rating)		
1. Be able to operate a micro	0 1 2 [✓ 3]	0 1 [✓ 2] 3	0 1 [✓ 2] 3
2. Be able to use word-processing software	0 [✓ 1] 2 3	0 [✓ 1] 2 3	0 [✓ 1] 2 3
3.	0 1 2 3	0 1 2 3	0 1 2 3

You can also get an averagae rating for each objective by adding up its three ratings. That will tell you which objectives have sufficient materials and which may, in fact, not have any materials at all with which they can be taught.

Again you want to find those objectives that are believed to be important, but no training or materials have been provided.

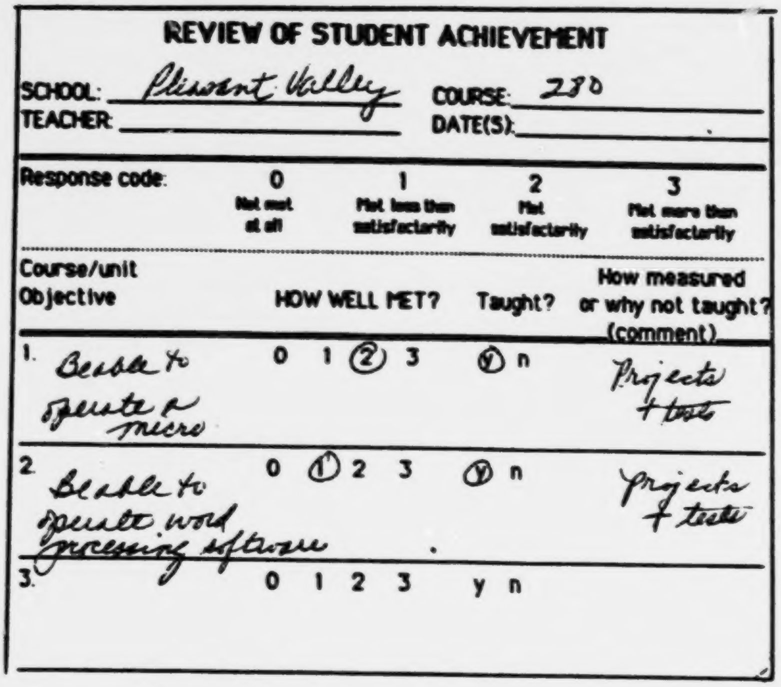
If you can keep this data and compare it to the results from another semester or another year, you may see some interesting results. For example, a school that has insufficient software for student use one year, sees that and purchases some. The next year, the school may see some objectives being met because the software is in use.

Summarizing data about student achievement

The data regarding student achievement is again the "bottom line" for many districts. Interest in this data will be very high.

The program implementation description acts as baseline information for describing the actual achievement on a later form. This description, however, does offer the teacher the opportunity to review the activities planned and review the "evidence" to see if, in fact, the processes are appropriate. Sometimes, the activities take up a great deal of time for the priority that the objective has. Sometimes you may discover that the evidence is best obtained with a project instead of the test you actually gave.

The form that most people will be interested in is the review of student achievement, shown here.



REVIEW OF STUDENT ACHIEVEMENT

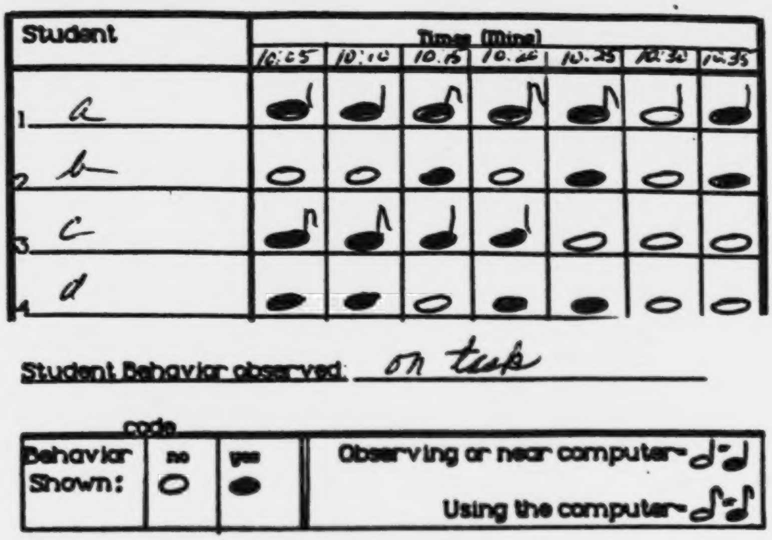
SCHOOL: Pleasant Valley COURSE: 230
TEACHER: DATE(S):

Response code:	0 Not met at all	1 Met less than satisfactorily	2 Met satisfactorily	3 Met more than satisfactorily

Course/unit Objective	HOW WELL MET?	Taught?	How measured or why not taught? (comment)
1. Be able to operate a micro	0 1 [✓ 2] 3	[✓ y] n	Projects + tests
2. Be able to operate word processing software	0 [✓ 1] 2 3	[✓ y] n	Projects + tests
3.	0 1 2 3	y n	

Again, you can tally up each of the responses and give a total fraction and percentage of the time that the response was given. If for example, you find that most of the responses are in the 2's and 3's you can state that "95% of the course goals were met satisfactorily or met more than satisfactorily by the students in the class." That's quite a statement for a computer education program to be able to make.

The student observation form is again one where the responses can be tallied and converted to percentages. For example, when most of the ovals are shaded and they have stems and flags attached, you will have a visual statement about the relationship of a certain behavior to the student's access to the computer.



Student	Times (Mins)						
	10:05	10:10	10:15	10:20	10:25	10:30	10:35
1. a	♩	♩	♪	♪	♪	𝅗𝅥	♩
2. b	○	○	●	○	●	○	●
3. c	♪	♪	♩	♩	○	○	○
4. d	●	●	○	●	●	○	○

Student Behavior observed: on task

code

Behavior Shown:	no ○	yes ●	Observing or near computer - 𝅗𝅥 ♩ Using the computer - ♪ ♪

You can actually count up and compare the number of times that the student was off task while at the computer or near a computer. Compare that to the number of times the student was on task and at or near a computer. Again, you have a number of ways that you could compare the information from one class period. If you observed additional classrooms, you will have more information to tally up and to compare.

Comparing information from different components

Because some of the forms for the different components had a similar structure, you could also summarize and compare information from two or more of the components. Take, for example, the commonality between the review forms. If the same goals and objectives are mentioned on the review of the goals, on the staff development, and on the instructional materials forms, you could work with that set of goals and objectives in several different ways.

The most interesting thing to do with the reviews is to compare the levels of satisfaction by transferring the data onto one form. Here is an example of how you could do that:

Sample form 7 -1

SUMMARY OF PROGRAM COMPONENTS

SCHOOL Pleasant Valley DISTRICT 280

Goal or Objectve	How Well Met	How Well Staff Trained	How Well Materials Supported		
			Hardware	Software	Print
1. To be able to operate a microcomputer	3	3	3	2	2
2. To be able to use word-processing software	2	3	2	1	1

Look for patterns in the set of numbers. In the comparison above, for example, the goal of operating a microcomputer was pretty well met and it was supported with the needed training and instructional materials. The next goal of using word-processing software was only satisfactorily met and it was not as well supported with the instructional materials.

This form is also useful as you go about making recommendations in the next section. It will be discussed further at that time.

Your next task

Checkpoint 7 -1 is provided at the end of this section to help you structure the process for summarizing the information on each of the various forms. You can customize it to fit your needs.

Sample 7 -1 is also provided to help you compare the different components in the computer education program.

Checkpoint 7 - 1

Summarizing the information

This form provides a framework for summarizing the data you have collected. In the left hand column, list the tool or instrument that you used to collect the data. In the middle column, state the basic question that is being answered and in the right hand side, how you plan to summarize the data.

Tool	Basic question answered	How data will be summarized

Sample form 7 -1

SUMMARY OF PROGRAM COMPONENTS

SCHOOL ______________________ DISTRICT ______________________

Goal or Objective	How Well Met	How Well Staff Trained	How Well Materials Supported		
			Hardware	Software	Print
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

Further References ..... for Section 7

Fink, A. and Kosecoff, J. An Evaluation Primer. Beverly Hills, CA: Sage Publications, 1978.

Morris, L.L. and Fitzgibbon, C.T. Evaluator's Handbook. Beverly Hills, CA: Sage Publications, 1978.

Morris, L.L. and Fitzgibbon, C.T. How to Measure Program Implementation. Beverly Hills, CA: Sage Publications, 1978.

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Suydam, M.N. Evaluation in the Mathematics Classroom. Columbus, OH: ERIC Information Analysis Center for Science, Mathematics and Environmental Education, 1974.

SECTION 8

MAKING THE RECOMMENDATIONS

This section offers some suggestions for making recommendations for the computer education program. To be able to do this, you need to have collected and summarized your data. With that support, you should be able to conclude:

1. which aspects of the program require no change because they are working well

2. what things could be added to the program to extend or reinforce the current program

3. if (and how) the program should be revised or restructured to be a better program

The section uses the sample forms from sections 6 and 7 to demonstrate the recommendation process. The forms at the end of the section can be used with or without revision on your part. If you are only reviewing your goals and objectives, then work with that part of the section at this time.

The importance of recommendations

Just as asking the right questions and developing the right tools was important to the data collection process, so is summarizing the information and developing the recommendations important to the improvement of the computer education program. The information that you get from the evaluation is supposed to be used for program improvement, but people aren't going to just "know" what to do with the data that you collect. You have to tell them. It's then up to them to implement the changes, perhaps with your help.

This is where your role as the evaluator becomes extremely important. Whether or not your recommendations are accepted and implemented, it is your duty to make the recommendations as appropriately as possible. If the recommendations are thoughtful, have merit, and can be done with the resources that the school has, you will indeed have a positive effect of the program.

Some general guidelines

Regardless of the length or depth of your evaluation there are some general guidelines to keep in mind as you start the process of making your recommendations.

1. Recommend first those things that don't need to change because they are working well.

Where are the successes in the computer education program? There probably quite a few of them and they should be discusssed first. You will have gathered and summarized some data that indicates that some aspects of the program don't need to be changed. Discuss those and acknowledge not only the successes, but the factors behind them, if you know what they are.

2. Recommend next those things that would help reinforce or extend the program.

You will discover some factors behind some of the "successes" in the program. You can use that information to recommend additional or parallel support in areas that would reinforce or extend the program. For example, you discover that when the students have sufficient access to the right type of application software and have appropriate projects that use the software, the students met the related objectives. However, some of the objectives weren't met where students did not have the needed access to the software. You might then recommend that the school purchase the necessary software.

3. Thirdly, offer suggestions for any revisions or restructure of the program.

You may uncover some areas of the program that need major revision or restructuring. You need to bring that to the attention of the school, as well as the success stories. You are not, after all, suggesting that the program be discontinued or completely revamped, just made better. It is, granted, much easier to talk about the success stories than to offer the suggestions for revision.

4. Formulate your recommendations around the four components of your computer education program.

Just as you formed the evaluation questions and designed the tools around the four components of the computer education program, you can do the same with your recommendations. In this way, if you have only been reviewing your goals and objectives at this stage, you would develop a set of recommendations for just the goals and objectives component.

5. Be realistic in making your recommendations.

On what components are the program planners or administrators willing to spend additional money? How much of the computer education program are they willing to change? Are they willing to delete, add or alter the objectives of the program? Are they willing to change hardware or the books they are currently using? If you have some sense of their commitment to change, your recommendations stand a better chance of being followed.

Making recommendations about each of the components

1. Goals and objectives

Computer-related goals and objectives seem to be constantly changing. They periodically need to be re-examined to see if any of them need to be revised, deleted, or if some need to be added.

Review your completed forms and the summaries regarding the goals and objectives from the last two sections. The last form from the last section may be the most helpful, because it give you some "back-up" data for each goal.

SUMMARY OF PROGRAM COMPONENTS

SCHOOL Pleasant Valley DISTRICT__________

Goal or Objectve	How Well Met	How Well Staff Trained	How Well Materials Supported		
			Hardware	Software	Print
1. Beable to operate a microcomputer.	3	3	3	2	2
2. Beable to use word processing software.	2	3	2	1	1
3.					
4.					

Again, you will see that many of the goals and objectives were met. You should first discuss the goals and objectives that do not need to be changed and why. You then suggest ways in which the program could be extended or reinforced to improve the goals and objectives that were only partially met.

If you see that some goals and objectives were not met, you need to acknowledge those, and then suggest what the school could do to remedy the situation.

2. Staff development

In reviewing the program implementation description and the review of the staff development forms, you will see areas of success and areas that need work. There always seems to be a need for more in-service work!

In making recommendations for the next round of training, you could include the following aspects of inservice: facilities, schedule, techniques, personnel, and a focus on integration. These seem to be effective elements in an inservice program.

3. Instructional Materials

Money for hardware and instructional materials for a computer education program may or may not be part of the school's regular budget. The source of funding may determine the use of the computer in the school. For example, computer could have been purchased with funds for a gifted and talented program. The computer lab is used only by those students. You evaluate the situation, and see the lack of access by other students in the school. You then recommend that all students be given equal access to the computer lab. The administration will not be able to accept your recommendation because of the funding stipulation.

It is always easier to recommend that additional or different materialasbe purchased than it is to recommend how existing materials could be used more effectively. However, given the school budgets and the time it takes to get the new materials, a school could benefit more by your recommendation for new techniques.

4. Student achievement

As you review the sample forms, you may see some areas where students achieved what was expected and perhaps some where assistance is needed. Again, you will probably see a relationship between student achievement and the instructional support for each objective. Review the objectives that the students are expected to achieve and make sure that they are all "achievable". If you don't think they are, state that and why you think so.

You may be able to suggest alternative ways to show the achievement. Too often, the only reference is a set of test scores. If test scores were the only measure of achievement in this evaluation, you may suggest that student work be included in the next evaluation by the teacher.

Again, point out the areas of success, then those that could use reinforcement and finally, the areas for some revision.

Your next task

The sample forms at the end of this section give you a structure for developing your recommendations. They are developed so that you can put in your recommendations by component (goals, staff, materials, students) and by the type of recommendation you make (continue, reinforce, revise)

Here is a short example:

Goal/ Objective	Observation	Recommendation
To be able to operate a micro	well met	Continue as previously taught
To be able to use word-processing software	only satisfactorily met	Add print materials and software.

Sample form 8 - 1

Making the Recommendations

SCHOOL____________________ DISTRICT ____________________

Program Goal/ Objective	Observation	Recommendation
		(no changes)
		(reinforcement-extension)
		(revision)

Sample form 8 - 2

Making the Recommendations

SCHOOL____________________ DISTRICT ____________________

Staff Development Goal/Obj	Observation	Recommendation
		(no changes)
		(reinforcement-extension)
		(revision)

Sample form 8 - 3

Making the Recommendations

SCHOOL ____________________ DISTRICT ____________________

Instructional Materials Goals	Observation	Recommendation
		(no changes)
		(reinforcement-extension)
		(revision)

Sample form 8 - 4

Making the Recommendations

SCHOOL ____________________ DISTRICT ____________________

Student Learning Outcomes	Observation	Recommendation
		(no changes)
		(reinforcement-extension)
		(revision)

Further References ..... for Section 8

Cronback, L.J. "Course Improvement Through Evaluation" in Bellack: Curriculum and Evaluation. Berkeley, CA: McCutchan, 1977

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SECTION 9

REPORTING THE RESULTS

This section first discusses the importance of your report. It then suggests some ways that you can make your report as appropriate as possible for your audience. Some general guidelines are then listed for making the report more effective.

The last part of the section is a sample outline that you may wish to follow.

The importance of a report

Your report of the results of the data collection is your final responsibility. Effective reporting of the results adds to their power and influence; poor reporting of the best of results is likely to make them ineffective.

The cliche - "Seeing is believing." applies here: written information encourages believability. When the information comes from an evaluator who collected data, its believability is enhanced. As the report writer or the communicator of the information collected, you will influence in a major way the response to and the action which comes from the results.

Your task is not easy. You want to present the information to the program planners and staff in a concise but meaningful way. You want the information to be credible and also useful to the audience.

The audience and the information

As a formative evaluator, you will probably report the results to the program planners and staff, already somewhat familiar with the computer education program. If the report goes to funding agencies or people in other institutions, the written report may be the only information they have about the program. It is difficult to write one report suitable for both audiences, but consider two approaches: (1) One report for all audiences (2) Two reports - one for the program planners and staff and a second for the funders or audience less familiar with the computer education program. Produce the second report as a "superset" of the first - that is, the first report with information added for clarity to those more distant from the program.

You should have decided whether to write one or two reports when you first outlined your tasks as the evaluator of the program. Writing a second report is not something you want to decide to do at the very end - when you will barely have time to write the first report!

As a check, summarize your audience's needs in the evaluation report. Will they want a report that is

formal or informal
technical or descriptive or both
witten or oral or both
delivered once or periodically

If interim reports are to be given, you might want to include sections in each report that describe what has occurred since the previous report, possibly in contrast with what should have occurred. If there are discrepancies between the planned and actual events, offer your recommended courses of action to the district.

It is vital to think about your audience as you collect the information. It is vital at the reporting stage. Will the report be delivered in time for the decision makers? Will the audience have had the opportunity for input into the evaluation itself? Those who will use your information will need it at a specific time; they will want the data credibly presented; they willwant conclusions and recommendations they can apply in their decision making process.

General guidelines

Many of these guidelines may seem like common sense to you, but it is worth restating them as reminders for the reporting stage.

1. Know who your audience is, what they need to know, and when.

Make a list of the different people who will be getting your results and why. List the questions they want answers to, as well as the information you think they should have. Some of the people may not know what they want so you must assist them to define their needs.

2. Use a reporting strategy consistent with your audience needs.

How much do they want to read or how long do they want to listen to you? Assuming that you prepare a written report, consider offering an "executive summary" at the beginning which summarizes the findings in a few paragraphs or a few pages. Interested people can read the complete report when they want or need to. If you are going to present the report orally, meet with people at a convenient time and provide some written information to the group.

3. Give your audience only important information.

A dissertation committee needs to see the statistical analysis and assumptions that produced each evaluation finding. The program planners and staff will not want that type of information. They will want to know only what is working well and why and what needs to be changed and why. A concise way of stating the crucial information in your report is to list these things beside each other with the appropriate information under each column.

Decision question	Evaluation findings	Recommended Course of action

4. Make it clear to the reader where the important information is located.

An effective means is to present the most important information in the beginning of the report, whether in the executive summary or in the first chapter and called "Evaluation Results".

Stress the important information in your report by using some editorial techniques. For example, you can often improve the effectiveness of th report by the spacing and lay out of the information. Consider boxing in the key points, underlining or capitalizing key words, changing the type fonts or size, and spacing the text so there is plenty of white space on a page.

To convey the content more easily to the reader, use section headings that are descriptive but short. You want to motivate the reader to read that section and the rest of the report.

5. Write the report so that it is easy to read.

Remember your audience! Keep in mind two or three key people who will read it and remember these people while writing every section and particularly while you are revising the report. Remember your audience! If appropriate, write the report as if one of the student's parents were going to read it. Assume that this parent wants the information but does not understand educational jargon or statistics and that he or she has a vocabulary of the average citizen in this country (about eighth grade). If you need to use technical terms, define them clearly.

Once you have a draft, read it over and do the following:

1. Shorten your words. Try "use" instead of "utilize".
2. Shorten your sentences. Try active verbs instead of passive ones. Divide long sentences into two.
3. Shorten your paragraphs. Cut out repetitive sentences. Confine your ideas to a single idea.
4. Personalize the style if it is appropriate for your audience.

Finally, have it read by interested whose judgements you respect. Ask them to comment on its readability , its completeness., and its effectiveness. Consider their advice before submitting a final report.

REPORT OUTLINES

There are as many ways to report your results as there are types of computer education programs and types of evaluation designs. The outline presented here is to serve as a guideline or checklist for deciding what information to present. Your evaluation design, the computer education program and the audience for the report will help shape the content and the sequence in which it is presented.

In general, you will want to include the following pieces of information in a report.

A. A cover page or title page with identifying information:
    - a report on the (name) computer education program
    - location (schools, district, and complete address)
    - group or names of people report submitted to
    - evaluation period
    - evaluator's name
    - report submission date

B. Summary of the findings
    - An "exectuve summary"

C. Background on the computer education program
    - How the program started
        - When, by whom, why
    - Program goals and objectives
        - Philosophy behind them
    - Students
        - How selected, types
    - Faculty and staff
        - How selected
    - Instructional materials
        - Computer hardware
        - Computer software
        - Print materials

    - Other characteristics
        - Includinag program activities and events

D. Summary of the evaluation process
    - How program was evaluated
    - People involved
    - Purpose
    - Design selected
    - Instruments used
    - Data collection procedures

E. Summary of the results
  - Program's important characteristics
  - Program successes
  - Program problems
  - Summary of responses to questions asked

F. Recommendations
  - Courses of action to be taken

Hopefully, your audience will accept your suggestions for changes as well as the summary of your findings regarding the successes of the computer education program.

Further References ..... for Section 9

Fink, A. and Kosecoff, J. An Evaluation Primer Beverly Hills, CA: Sage Publications, 1978

Morris, L. L. and Fitzgibbon, C. T. How to Present an Evaluation Report. Beverly Hills, CA: Sage Publications, 1978

Instructions for using the student observation form:

2 behaviors

1. Select one or two student behaviors that you would like to track during a class period. Name the behaviors and their opposites on the code chart on the form. Put the behaviors in alphabetic order.

Examples: behavior / opposite behavior
cooperative / uncooperative
on task / off task

Choose behaviors which are observable and on which you can agree with colleagues about the meaning. Discuss sample student behavior and practice coding it, then check the level of agreement.

2. Determine the time periods for checking the behavior of each student. Five minute intervals are suggested because of the ease of remembering when next to check.

Example:	40 minute class: 10:00 - 10:40						
Check at:	10:05	10:10	10:15	10:20	10:25	10:30	10:35

The longer the time limit, the more students you can observe during each time segment. The shorter the time limit, however, the larger the total number of observations per student.

2. As class begins, pick a sample of five or six students in that class to observe. Write down an identifying characteristic about each student in the student column on the chart. Try not to select students from the same group.

3. Fill in the date, observer's name, teacher name, and classroom. A sketch could be drawn that shows the general organization of the room: the placement of the computer(s), teacher and student desks or tables.

4. Note the behavior of each of the students for each of the time periods, by shading in none, part or all of the oval. Then add the marks that indicate the proximity to the computer.

uncooperative, off task	uncooperative, on task
cooperative, off task	cooperative, on task
cooperative, off task & observing computer	cooperative, on task & using computer

Sample form **STUDENT OBSERVATION FORM**

2 behaviors

Date____________ Observer__________________

Student	Times (Mins)						
1.	○	○	○	○	○	○	○
2.	○	○	○	○	○	○	○
3.	○	○	○	○	○	○	○
4.	○	○	○	○	○	○	○
5.	○	○	○	○	○	○	○
6.	○	○	○	○	○	○	○

Student Behaviors: 1 = __________ 2 = __________

code

Behaviors	② no	② yes
① no	○	◑
① yes	◐	●

comments

𝅗𝅥 = observing computer

♪ = using the computer

Teacher name____________ Classroom __________

Sketch of room, students :

STUDENT OBSERVATION FORM

Date Nov 21 Observer K. Billings

Student	Times (Mins)						
	10:05	10:10	10:15	10:20	10:25	10:30	10:35
1 a	○	◑	◑	○	◑	◑	◑
2 b	♩	♩	♩	♪	♪	♪	♪
3 c	◐	◐	◐	◐	○	○	○
4 d	○	○	◑	◐	◐	◐	◐
5 e	♩	♪	♩	♪	♪	♩	♪
6 f	♩	♪	♪	♩	♩	♪	♪

Student Behaviors: 1 = Cooperation 2 = on/off task

code

Behaviors	② off task no	on task yes
① Cooperation no	○	◑
yes	◐	●

comments

𝅗𝅥 = observing computer

♪ = using the computer

Teacher name Ms. Digit Classroom 5-6.

Pleasant Valley Middle School

Sketch of room, students :

GLOSSARY

achievement tests – tests that measure performance as opposed to aptitude.

affective – in the domain of affect or feelings and attitudes. (Bloom)

assessment– often used in place of evaluation but sometimes refers to more of a quantitative process than some forms of evaluation.

behavioral objectives – specific goals of a program, which are stated in measureable terms.

case studies – evaluation method that involves extensive observations and/or interviews. Case studies complement quantitative research.

cognitive – in the domain of factual knowledge.

computer assisted instruction – (CAI) computer presentation of materials which may include tutorial, practice, simulation and/or testing.

computer-managed instruction – (CMI) computer software that records student performance and/or test scores and provides feedback to teachers and/or students.

criterion referenced tests – tests that provide information about a student's performance related to a specific objective. Test scores are interpreted by comparison with pre-determined criterion instead of a reference group. See norm-referenced tests.

document review – process of examining existing documents or records to gather information. Examples of such documents might be student cumulative folders, teacher lesson plans, district computer plans, or computer roon sign-in sheets.

Glossary continued...

evaluation – process of determining the merit, worth, or value of a product or a process.

formative evaluation – evaluation conducted during the development or implementation of a program or product, typically conducted for in-house staff of the program.

goals – general description of the intended outcomes. Typically, program goals are less specific than program objectives.

interviews – discussion, typically face-to-face, to gather information, facts, or statements from a person.

needs assessment – a study of needs or wants that might be used for guidance in planning an educational program or product.

norm referenced test – a test that is constructed to give student's relative performance by comparison to other students' performance on the same test.

objectives – specific descriptions of intended outcomes.

observations – process of watching or inspecting a situation, typically recording information with notations on forms for later review.

pre-test – measurement to determine level of knowledge the student has or the amount of instruction that is needed prior to a teaching process.

post-test – measurement that is given after a teaching process to judge a student's educational gain,

glossary continued...

program – used to describe the curriculum, materials, and staff resources in a given content area; i.e. a reading program.

psychomotor – in the domain of muscular skills (Bloom). A typical example of a psycho-motor skill is eye-hand coordination.

questionnaire – printed form that contains questions or statements to gather information. The basic instrument for surveys, particularly for large numbers of people.

reliability – consistency with which an instrument measures whatever it is designed to measure. An instrument is reliable when it yields consistent results. (Morris, Fitz-Gibbon)

research – generalized field of a disciplined investigation.

standardized test – a test with standardized instructions for administration and for use.

summative evaluation – evaluation conducted to judge a program's achievement of its intended goals. Summative evaluations are sometimes used to compare the results of one program with another.

validity – one aspect of a measure's credibility. An instrument is valid if it is appropriate for what needs to be measured. (Morris, Fitz-Gibbon)

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